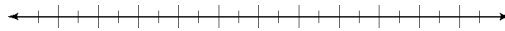


Claudia Steel- Summer Practice**Short Answer**

1. A bakery bought 225 pounds of baking powder. It used 6.8 pounds per day. How much did the bakery have left after three days? Write number sentences to show your work.

Solve the problem.

2. $7 - 10 =$
3. $-7 + 10 =$
4. $-12 - -11 =$
5. $11 - -8 =$
6. $\frac{-24}{-6} =$
7. $25 \times -6 =$
8. $-12 \times -5 =$
9. $-27 \div 3 =$
10. Construct a number line using the line below. Locate the numbers in parts (a)–(c) on your number line.



a. -8

b. 0

c. $\frac{1}{3}$

d. In a different color, locate the opposite of each number in parts (a)–(c).

11. Solve each of the computation problems below.

a. $-15 - 7 =$ _____

b. $15 + -7 =$ _____

c. $-1.5 + -8.5 =$ _____

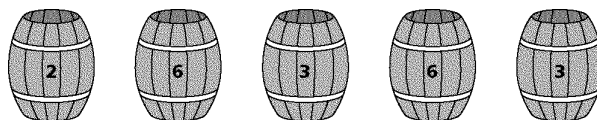
d. $11 - 23$ _____

12. The table contains data for the temperature in Portland, Maine, during the month of January. Complete the table.

Temperature at 8:00 A.M.	Temperature at 8:00 P.M.	Change in temperature From 8:00 A.M. to 8:00 P.M.
-8°	3°	
-2°	-13°	
-13°		11°
-1°		15°
	-2°	-8°
	-5°	4°

Use this information: In the fifteenth century, European flour merchants used positive and negative numbers. If the merchants wrote $+5$ on a flour barrel, it meant that the barrel was 5 pounds overweight; -5 meant that a barrel was 5 pounds underweight.

13. Suppose five 100-pound flour barrels are labeled as shown below.



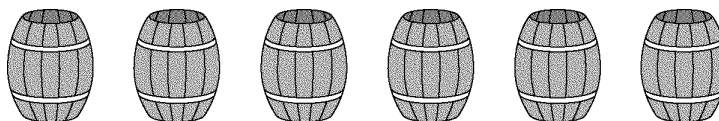
- Do the five barrels contain more or less than 500 pounds altogether?
- How much more or less?

14. Suppose these numbers are on eight 100-barrels:.

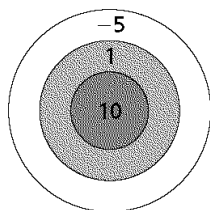
-6 -8 $+7$ $+2$ -10 $+6$ $+3$ $+1$

- Do the barrels contain more or less than 800 pounds altogether?
- How much more or less?

15. The drawings below show six 100-pound barrels. The total weight in the barrels is 11 pounds under 600 pounds. Suppose each barrel is marked with a different number. Show a way that the barrels could be marked. Keep your numbers between -10 and $+10$.



16. Terri made up a game of darts for a party. To play the game, you throw three darts at the board and then total your points. The highest score wins. Everyone at the party played the game several times. List all possible scores for three darts if all three hit the target.



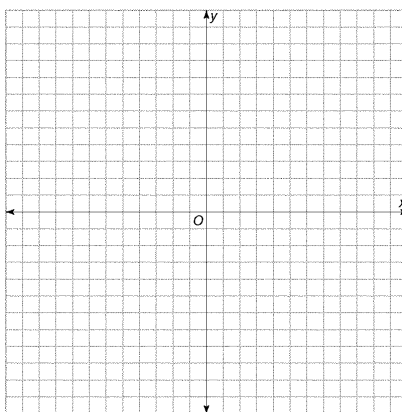
Answer true or false, and explain your answer.

17. The sum of two negative integers is always negative.
18. The product of two negative integers is always negative.
19. The sum of a negative integer and a positive integer is always positive.
20. The product of a negative integer and a positive integer is always negative.
21. One integer added to another integer gives a sum of -9 . When the smaller integer is subtracted from the greater integer, the difference is 1. What could the two integers be?
22. **a.** Below is a grid with four quadrants. Plot the following points, and connect them with line segments.

Point A (1, 0)

Point B (3, 4)

Point C (4, 0)



- b.** On the same grid paper, transform your figure ABC using the rule $(2x, 2y)$.
 - c.** On the same grid paper, transform your figure ABC using the rule $(-2x, -2y)$.
 - d.** On the same grid paper, transform your figure ABC using the rule $(-2x, 2y)$.
 - e.** On the same grid paper, transform your figure ABC using the rule $(2x, -2y)$.
 - f.** Without drawing, predict what will happen to ABC using the rule $(3x, 3y)$.
 - g.** Without drawing, predict what will happen to ABC using the rule $(-3x, -3y)$.
 - h.** Without drawing, predict what will happen to ABC using the rule $(-3x, 3y)$.
23. Rewrite these temperature readings from lowest to highest.
 -9° 14° -2° 0° 8° -1° 1°
 24. **a.** Suppose the temperature is 6° . What will the temperature be if it rises 22° ?
b. Suppose the temperature is 6° . What will the temperature be if it falls 7° ?
 25. **a.** Suppose the temperature is -6° (6° below 0°). What will the temperature be if it rises 13° ?
b. Suppose the temperature is -6° . What will the temperature be if it falls 15° ?

26. Barry plays fullback on his high school football team. Sometimes he gains yardage (+5 means a 5-yard gain). Sometimes he loses yardage (−3 means a 3-yard loss). Determine Barry's total yardage in each game below.

a. Game 1: +4 +6 +7 +1 −8

b. Game 2: +6 −3 0 +15 −1 +8 +11 −6

27. Write a number less than −1000.

28. After several minutes of playing MathMania, three teams have the following scores:

SuperSmarties

650

DynaBrains

−150

MegaMinds

200

- a. The SuperSmarties are how many points ahead of MegaMinds?

Write a number sentence that could be used to find this amount.

- b. The SuperSmarties are how many points ahead of DynaBrains?

Write a number sentence that could be used to find this amount.

- c. The MegaMinds are how many points ahead of DynaBrains?

Write a number sentence that could be used to find this amount.

Tell how far apart the two numbers are on a number line.

29. −15 and +20

30. 37 and 17

31. −5 and −12

Solve the problem.

32. $-14 - +8 =$

33. $18 - 27 =$

34. $14 - -8 =$

35. $27 - 18 =$

36. $-150 - +24 =$

37. $90 - -99 =$

38. $16 + 12 + -4 =$

39. $\underline{\hspace{1cm}} + 21 = 13$

40. The temperature for the past 8 hours has been changing at the rate of -1.5° each hour. The meteorologist predicts that the temperature will continue changing like this for the next 6 hours. The present reading is 0° .
- a. What was the temperature reading 7 hours ago?
 - b. What temperature is predicted for 6 hours from now?
 - c. When was the temperature reading 6° ?
 - d. When is the temperature expected to be -8° ?
41. Use this information: Suppose you are in a building in which the floors are numbered from 0 to 15. The building has an underground parking garage with 10 levels, which are numbered from -1 to -10 . Which floor is *farther from* floor -2 ? (Drawing a picture may help you solve this problem.)
- a. floor 7 or floor -10
 - b. floor 2 or floor -8
 - c. floor 1 or floor -5
42. What value is represented by each set of chips? (B = black, R = red)
- | | | |
|-------------|-------------|-------------|
| a. 5 B, 3 R | b. 5 B, 4 R | c. 5 B, 5 R |
| d. 5 B, 6 R | e. 3 B, 5 R | f. 4 B, 5 R |
| g. 5 B, 5 R | h. 6 B, 5 R | |
43. What value is represented by each set of chips? (B = black, R = red)
- a. 5 B, 5 R
 - b. 12 B, 12 R
 - c. 44 B, 44 R
 - d. 113 B, 113 R
 - e. What pattern do you see?
44. Write 3 different combinations of chips that show each value:
- | | | | |
|------|---------|------|----------|
| a. 2 | b. -4 | c. 0 | d. -18 |
|------|---------|------|----------|
45. Sarah added 7 pairs of black and red chips to her chip board. How did the value change? Explain your thinking.
46. Sam added 4 black and 7 red chips to his chip board. How did the value change? Explain your thinking.

The Smarts, the Brains, the Minds, the MegaBrains, and the SoSmarts are teams that each answered five questions. The score for four of the questions and the final score are given for each team. Give the point value of the fifth question and tell whether the team answered it correctly.

47. The Smarts answered a 150 point question correctly, a 200 point question correctly, a 50 point question incorrectly, and a 250 point question incorrectly. Their final score was 250 points.

Describe the chips that were on the chip board before the given action listed below took place. Then write an additional sentence that describes the value of the original board, the value of the chips that are added, and the new value of the board.

48. 7 black chips are added. Now there are 8 black chips and 3 red chips on the board.
49. 5 red chips are added. Now there are 8 black chips and 12 red chips on the board.
50. 2 black chips and 2 red chips are added. Now there are 5 black chips and 3 red chips on the board.
51. 5 black chips and 8 red chips are added. Now there are 7 black chips and 8 red chips on the board.
52. 6 black chips and 8 red chips are added. Now there are 6 black chips and 11 red chips on the board.
53. Rewrite these numbers in order from smallest to largest.

$$\frac{2}{5} \quad 0 \quad -\frac{3}{2} \quad -\frac{9}{8} \quad \frac{8}{7}$$

54. Plot the following points on the grid and label each point.

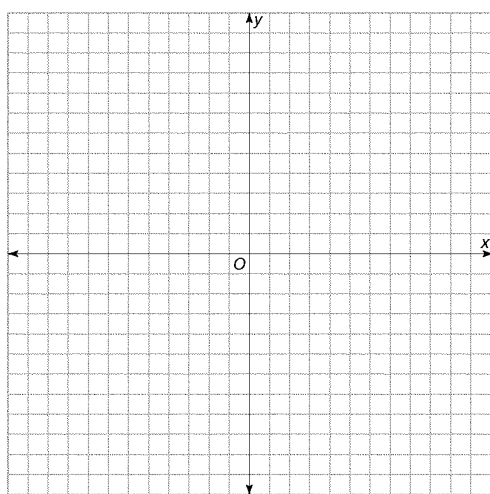
a. (1, -5)

b. (2, 0)

c. (-3, 5)

d. (0, -2)

e. (-2, -2)



In a survey, Eric, the team manager, asked the 120 soccer players in the league which drink they preferred during and after the game.

Drink	During Game	After Game
Gatorade	70	10
Ocean Spray	10	80
Evian Water	40	30

55. Write mathematical comparison statements about player drink preferences **during** the game.
 - a. One statement using ratios
 - b. One statement using percents

56. Write mathematical comparison statements about player drink preferences **after** the game.
- One statement using fractions
 - One statement using differences
57. **a.** Write a ratio to describe the number of players who prefer Gatorade to Evian Water **during** the game.
- b.** Write an equivalent form of the ratio.
58. Ricardo, the soccer league director, made the following statements based on Eric's survey. Which statements are accurate? Explain how you made each decision.
- During the game, players prefer Ocean Spray to Evian Water by a ratio of 4 to 1.
 - 25% of the players prefer Evian Water after the game.
 - More than half of the players prefer Gatorade during the game.
59. So far this year, the University of North Carolina Tar Heels have won 22 games and lost 5 games.
- If they continue at the same pace and lose 45 games, how many will they have won?
 - What is an appropriate comparison to make between the number of games won and the number of games lost? Explain your reasoning for the type of comparison you chose.

The school newspaper club votes to have a picnic for its 30 members. The picnic planners investigate prices for food and drink at two stores and list their findings in a table.

Food and Drink Prices

Item	Streamline Market		Bulky Store	
	Quantity	Cost	Quantity	Cost
Cola	6 cans (12 ounces each)	\$1.99	a case of twenty-four cans (12 ounces each)	\$6.99
Ground Beef (for hamburgers)	1 pound (makes four hamburgers)	\$1.39	10 patties ($\frac{1}{4}$ pound each)	\$4.99
Hamburger Buns	8-count package	\$1.49	12-count package	\$2.09
Potato Chips	small bag (10.5 ounces)	\$0.89	Fun Pack (eight 10.5-ounce bags)	\$6.99

60. How much does it cost to make 30 hamburger patties with ground beef purchased from Streamline? Show your work.
61. How much do 30 hamburger patties cost at Bulky's? Show your work.
62. Which store offers the better buy for cola? Explain.
63. Find a value of x that will make each proportion true.

a. $\frac{2}{3} = \frac{x}{24}$

b. $\frac{3}{4} = \frac{18}{x}$

c. $\frac{x}{5} = \frac{4}{20}$

d. $\frac{6}{10} = \frac{x}{15}$

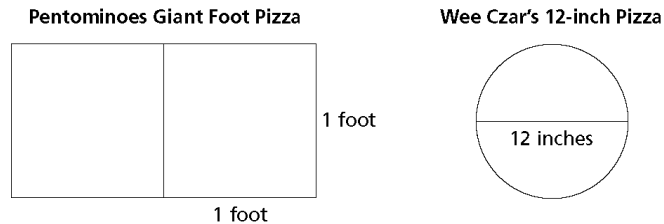
e. $\frac{12}{16} = \frac{x}{20}$

f. $\frac{8}{12} = \frac{14}{x}$

Use the following data about Lincoln Middle School.

Lincoln Middle School Enrollment: 623 students Ratio of girls to boys: 2 to 3
--

64. How many girls are enrolled in Lincoln Middle School?
65. Suppose there is one teacher on staff for every 25 students enrolled. Estimate the number of teachers at Lincoln Middle School.
66. Pentominoes Pizza introduced a new pizza called the Giant Foot to compete with Wee Czar's 2-pizzas-for-the-price-of-1 offer. The Giant Foot is two 1-square-foot pizzas put together. Pentominoes' ad claims that the Giant Foot is 25% larger than two Wee Czar's 12-inch round pizzas. A Giant Foot costs \$8.99. Two 12-inch round pizzas from Wee Czar's cost \$8.88.



- a. Which offer gives you more pizza for your money?
- b. Is the Giant Foot 25 % larger than two 12-inch round pizzas from Wee Czar's? If so, prove it. If not, use percents to show how they really compare.
67. Which offer is the better buy?
- | | |
|--|--|
| 2-liter bottles of Orange Splash!

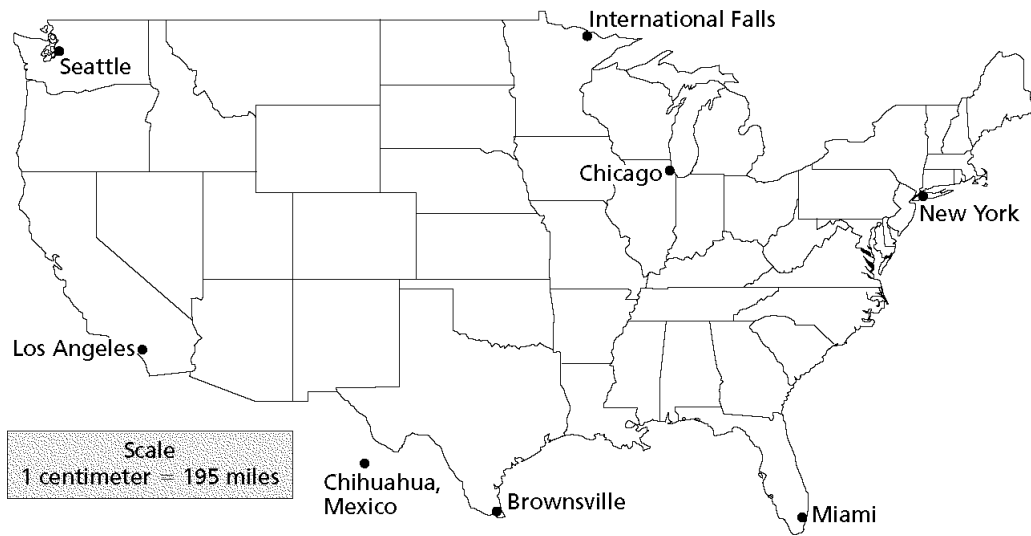
\$1.99 per 8-pack | $\frac{1}{2}$ -liter bottles of Orange Splash!

4 for \$4.99 |
|--|--|
68. On our planet, land covers 57,900,000 square miles and water covers 139,000,000 square miles.
- a. Write a statement comparing the earth's land surface to its water surface.
- b. What portion of the earth's surface is water?
- c. How does the earth's total surface area compare to your state's area?
69. Leticia is shopping for gifts. She compared prices at two stores so she could get the best deals. For each item, tell which store has the best price.

Gift Prices

Gift	Darren's Warehouse	U-Rule Department Store
handkerchiefs	package of 10 for \$11.00	package of 3 for \$3.75
greeting cards	package of 8 for \$9.99	package of 3 for \$5.49
ballpoint pens	one dozen for \$9.60	2 for \$1.59
audiocassette tapes	one dozen for \$13.20	5-pack for \$5.95

Use the map below.



70. What would be the approximate driving time to travel the United States from coast to coast at an average speed of 55 miles per hour?
71. An airplane averages 500 miles per hour. Choose two cities on the map, and find out how long would it take this plane to fly between them.
72. How far is it from your city to Chihuahua, Mexico?

Use the data below. The table shows the all-time top 10 American movies in terms of earnings.

All-Time Top Ten American Movies		
Rank	Title (Year released)	Earnings (millions)
1	E. T. The Extra-Terrestrial (1992)	\$399.8
2	Jurassic Park (1993)	356.8
3	Star Wars (1977)	322.0
4	The Lion King (1993)	310.1
5	Forest Gump (1993)	300.6
6	Home Alone (1990)	285.5
7	Return of the Jedi (1983)	263.0
8	Jaws (1975)	260.0
9	Batman (1989)	251.2
10	Raiders of the Lost Ark (1984)	242.4
	Total Earnings	\$2991.4

Source: *Variety*, Feb. 20-26, 1995, as found in *The World Almanac and Book of Facts 1996*. Ed. Robert Famighetti. Mahwah, New Jersey: Funk and Wagnalls, 1995, p. 250.

73. How do the earnings of *E.T. The Extra-Terrestrial* and *Raiders of the Lost Ark* compare?
74. Write a fraction that compares the earnings between *Forrest Gump* to the total earnings from the top 10 movies.
75. Write a ratio that compares the earnings of *Jurassic Park* to *Batman*.
76. Write a decimal that compares the earnings of *Star Wars* to the total earnings from the top 10 movies.

Use the data in the chart, which shows the population of some counties in the United States.

Selected Counties with Populations over 1 Million			
County	State	1990 Population	1994 Population
Los Angeles	California	8,863,052	9,149,840
Harris	Texas	2,818,101	3,045,212
Maricopia	Arizona	2,122,101	2,346,610
Kings	New York	2,300,664	2,271,000
Wayne	Michigan	2,111,687	2,064,908
King	Washington	1,507,305	1,587,505
New York	New York	1,487,536	1,506,430
Cuyahoga	Ohio	1,412,140	1,403,239
Broward	Florida	1,255,531	1,382,983
Allegheny	Pennsylvania	1,336,449	1,320,704

Source: Bureau of the Census, as found in *The World Almanac and Book of Facts 1996*. Ed. Robert Famighetti. Mahwah, New Jersey: Funk and Wagnalls, 1995, p. 388.

77. How does the population for Los Angeles in 1990 and 1994 compare?
78. Which county had the greatest increase in population from 1990 to 1994? What was the increase?
79. Which counties had a decrease in population from 1990 to 1994? Write the decreased amounts as percents.

Use these data about planets in our solar system.

Planet	Average Distance From the Sun (millions of miles)	Diameter at Equator (miles)	Time to Circle the Sun	Time to Turn on Axis
Mercury	36	3,032	88 days	59 days
Venus	67	7,521	225 days	243 days
Earth	93	7,926	365 days	23.9 hours
Mars	142	4,222	687 days	24.6 hours
Jupiter	484	88,846	11.9 years	9.9 hours
Saturn	891	74,897	29 years	10.7 hours
Uranus	1,785	31,763	84 years	17.2 hours
Neptune	2,793	30,775	164 years	16.1 hours
Pluto	3,647	1,485	248 years	6 days

Source: The National Space Science Data Center at NASA's Goddard Space Flight Center

80. Write a statement comparing the time it takes for the planets to turn on their axes.
81. Write a statement comparing the time it takes for various planets to circle the Sun.

82. Mr. Martinelli's science class wants to make a scale model of the universe for the science fair. They need to make some calculations before building their model.
- a. The diameter of the Sun is 865,000 miles. If the class made the Earth's diameter = 1 inch, what would be the diameter of the scale model of the Sun?
 - b. If they made Earth's diameter = 1 inch, what would be the diameter of the scale model of Jupiter?
 - c. If they made Earth's diameter = 1 inch, what would be the diameter of the scale model of Pluto?
 - d. If the class placed the planets by using a scale of 1 inch = 1 million miles, how many feet from the Sun would the model of Mercury have to be placed?
 - e. Using the scale 1 inch = 1 million miles, how far from the Sun would the model of Earth have to be placed?
 - f. Using the scale 1 inch = 1 million miles, how far from the Sun would the model of Pluto have to be placed?
83. The table below shows the number of years a typical person spends engaged in various activities over a lifetime:

Activity	Number of Years
Sleeping	24.5
At work or school	13.5
Socializing	4.5
Watching TV	12
Reading	3
Eating	3
Bathing and grooming	1.75
Talking on the telephone	1
Miscellaneous activities*	9.5

* Such as housekeeping, shopping, waiting in lines, walking, driving, entertainment, and doing nothing

- a. According to the table, how long is a typical person's lifetime? Explain your reasoning.
- b. Does a typical person spend more years watching TV or sleeping? Write a ratio that compares these two amounts.
- c. The number of years spent doing miscellaneous activities is about how many times the number of years spent socializing?
- d. What percent of the total number of years in a lifetime, are spent sleeping? What percent are spent at work or school?
- e. About what fraction of a lifetime is spent watching TV and talking on the phone? What fraction is spent in miscellaneous activities?
- f. Make an interesting comparison statement about the data in the table. Tell why you think your comparison is interesting.

84. This table shows the typical weight of various parts of the body for an adult weighing 152 pounds.

Body Part	Weight (pounds)
Head	10.5
Neck and Trunk	70.0
Arms	16.5
Hands	2.5
Legs	47.5
Feet	5.0

- Estimate the percent of the total body weight for each part. Explain your reasoning.
 - Make a circle graph that shows the percent of the total body weight for each body part.
 - The neck, trunk, and legs account for what total percent of the body weight?
85. Of the 756 students in Chad's middle school, 44% participate in sports, 29% play in the band, and 37% take the bus to school.
- How many students in Chad's middle school play in the band? Explain your reasoning.
 - How many students in Chad's middle school take the bus to school?
 - If you add up the percents of students who play sports, play in the band, and take the bus to school, you get 110%. Explain why the percents do not add to 100%.
86. Of the students in Ms. Yadav's fourth-period math class, 16 are wearing athletic shoes, 10 are wearing boots, and 4 are wearing other kinds of shoes.
- What fraction of Ms. Yadav's students are wearing boots? Explain your reasoning.
 - Suppose 1006 students attend the middle school where Ms. Yadav teaches. Use your answer from part a to estimate the number of students who are wearing boots. Explain your reasoning.

87. In 5, use this table showing the numbers of endangered species throughout the world.

Numbers of Endangered Species

	United States only	United States and foreign	Foreign only
Animals	262	51	493
Plants	378	10	1
Total	640	61	494

- About what fraction of the total number of endangered species are found only in foreign countries?
 - How many times more endangered plant species are there in the United States than in foreign countries? Explain your reasoning.
 - About what percent of the total number of endangered animals lives only in the United States?
 - What is the ratio of Endangered Plants to Endangered Animals in the United States only? In foreign countries only?
 - What is the difference between the number of endangered animals in the United States and foreign countries and the number of endangered plants in the United States and foreign countries?
88. A micron is a metric unit of length. There are 1 million (1,000,000) microns in 1 meter.
- How many microns equal 1 centimeter? Explain your reasoning.
 - An object has a length of 2911 microns. What is the length of the object in centimeters?
 - An object has a width of 0.000351 meters. What is the width of the object in microns?
 - Which metric unit—meters, centimeters, or microns—do you think is best to use to express the length of your pencil? Explain your reasoning.
89. At Louis Armstrong School, Ms. Turini's homeroom has 18 boys and 12 girls. Use ratios to describe the gender distribution of this class, by answering the following questions in at least two equivalent ways.
- What is the ratio of boys to girls in Ms. Turini's homeroom?
 - What is the ratio of girls to boys?
 - What is the ratio of boys to students in the class?
 - What is the ratio of students in the class to boys?

Among American physicians, more are male than female. However, the ratio varies in different age groups. The following table shows some data at the beginning of 1998. Use the data to answer the questions that follow.

	< 35	35–44	45–54	55–64
Male	84,445	152,210	142,314	92,260
Female	49,395	61,192	33,180	12,022

Source: AMA cited in *The World Almanac and Book of Facts*, 1999, page 881.

90. Approximate each of the following ratios in three equivalent forms. Begin by rounding the given data to the nearest 5,000 to form the first ratios.

The ratio of male to female doctors in the

- | | |
|-------------------------------|----------------------------|
| a. under 35 age group; | b. 35–44 age group; |
| c. 45–54 age group; | d. 55–64 age group. |

91. Use the approximate ratio data on male and female physicians to answer these questions. Express each answer in two equivalent forms—one a fraction and one a percent.

What fraction of physicians are females in the

- | | |
|-------------------------------------|----------------------------|
| a. under 35 years age group? | b. 35–44 age group? |
| c. 45–54 age group? | d. 55–64 age group? |

92. Josh jogs an average of 8 miles per week for three weeks.

- At this rate, how many miles will he jog in 52 weeks?
- How many miles will he need to jog during the fourth week to bring his four-week average to 10 miles per week?

93. Tony can type at a constant rate of 55 words per minutes.

- Write an equation for the number of words, W , Tony can type in T minutes.
- How many words can Tony type in 20 minutes?
- If Tony has a half hour to type a 1,600-word essay, will he have time to type the entire essay? Explain your reasoning.

94. The following table shows caffeine content of 12-ounce cans for five popular soft drinks.

Caffeine Content in Milligrams

	12-Ounce Can	20-Ounce Bottle
Diet Sun Drop	69	
Mountain Dew	55	
Dr. Pepper	41	
Pepsi Cola	38	
Coca-Cola	34	
Barq's Root Beer	22	

Source: National Soft Drink Associates as given in "Soft Drinks Hard Facts"
The Washington Post/Health/February 27, 2001, page 12.

- a. Complete entries in the column giving caffeine content of 20-ounce bottles for each soft drink.
- b. Complete the following sentences comparing caffeine content in soft drinks. In each case, use the exact data first. Then give a simpler ratio that is exactly or nearly equivalent to the first.
- The ratio of caffeine in Diet Sun Drop to that in Barq's Root Beer is ... or about ...
 - The ratio of caffeine in Mountain Dew to that in Dr. Pepper is ... or about ...
 - The ratio of caffeine in Mountain Dew to that in Coca Cola is ... or about ...

95. The table below gives data about participation in the five most popular sports activities in the United States—bicycle riding, camping, exercise walking, fishing, and swimming. The numbers are projections based on a 1993 survey of 10,000 households. The survey counted anyone 7 years old or older who participated in an activity more than once per year.

Participation in Sports Activities

Activity	Males	Females	Ages 12–17	Ages 55–64
Bicycle	24,562,000	23,357,000	8,794,000	2,030,000
Camping	23,165,000	19,533,000	5,336,000	2,355,000
Exercise walking	21,054,000	43,373,000	2,816,000	7,782,000
Fishing	30,449,000	14,885,000	4,945,000	3,156,000
Swimming	27,713,000	33,640,000	10,874,000	2,756,000
Total in group	111,851,000	118,555,000	21,304,000	20,922,000

Source: National Sporting Goods Association, as found in the *Statistical Abstract of the United States 1995*, Published by the Bureau of the Census, Washington DC, p. 260.

- Why don't the numbers in the columns add to the given totals?
- Is it fair to say that exercise walking is about twice as popular among females as among males? Use fractions, ratios, percents, or differences to support or contradict that claim.
- Is it fair to say that swimming is about 4 times as popular among young people (ages 12–17) as among older people (ages 55–64)? Use fractions, ratios, percents, or differences to support or contradict that claim.
- Can you compare the participation of teenage boys in these activities to the participation of older-adult women by using the data in the table?
- The U.S. population in 1993 was about 258 million. In 2000 it was about 281 million. What projections of male and female participants in the five popular sports would you make for 2000?

Be ready to explain your strategies for answering each of these questions.

96. On a map, 1 centimeter = 50 kilometers. What is the actual distance between two towns that are 3.5 centimeters apart on the map? Explain your reasoning.
97. Kyle has maintained a consistent batting average of .350 on the Metropolis Middle School baseball team during the first half of the season. Assuming his batting average stays the same for the rest of the season, write and solve proportions to answer these questions:
- How many hits will Kyle make in his next 20 times at bat?
 - How many hits will Kyle make in his next 35 times at bat?
 - How many times at bat will it take Kyle to make 10 hits?
 - How many times at bat will it take Kyle to make 18 hits?

98. In a home-run derby contest after the little league baseball session had ended, Calvin hit 4 homeruns out of his 12 hits. Suppose Calvin's success rate stays about the same for his next 100 hits. Write and solve proportions to answer these questions.
- a. About how many homeruns will Calvin make out of his next 48 hits?
 - b. About how many homeruns will Calvin make out of his next 84 hits?
 - c. About how many hits will it take for Calvin to hit 8 more homeruns?
 - d. About how many hits will it take for him to make 36 more homeruns?
99. Find the value of x that makes the two ratios equivalent.
- | | | |
|---------------------------|----------------------------|----------------------------|
| a. 4 to 7 and x to 63 | b. 4 to 7 and x to 87.15 | c. 12 to x and 4 to 117 |
| d. 12 to x and 15 to 45 | e. 2 to 3 and 7 to x | f. 23 to 115 and x to 15 |

A group of middle school students wondered:

What's the typical number of hours of sleep middle school students watch in a week/weekend?

Just how many movies and/or videos do middle school students watch in a week/weekend?

This check-up uses data collected from 330 middle school students to be used to answer these questions. The data are:

HrsSleep – typical number of hours of sleep each student had per night during a week

MoviesandVideos – the number of movies and videos each student watched a week/weekend

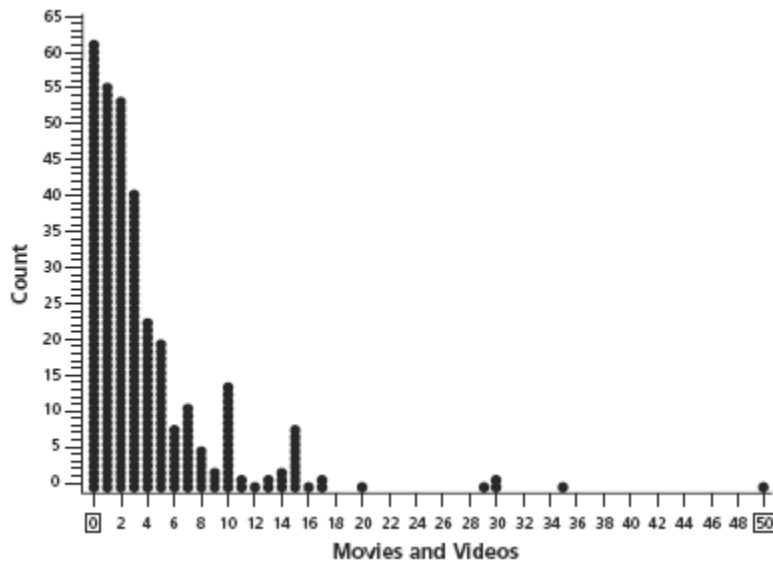
For each student, we also know:

Grade – sixth, seventh, or eighth

Gender – boy or girl

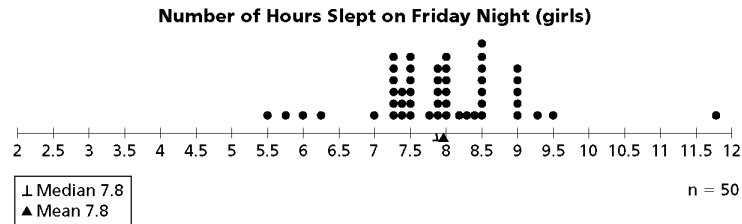
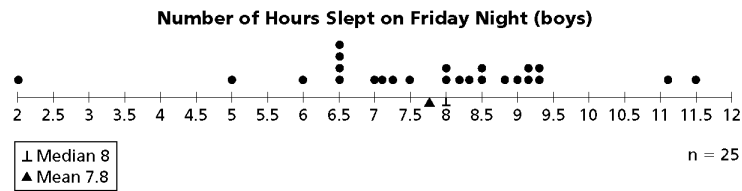
100. Describe how you think these data were collected.

101. Here is a graph that shows the numbers of movies and videos watched during a week/weekend by each of the 330 students.



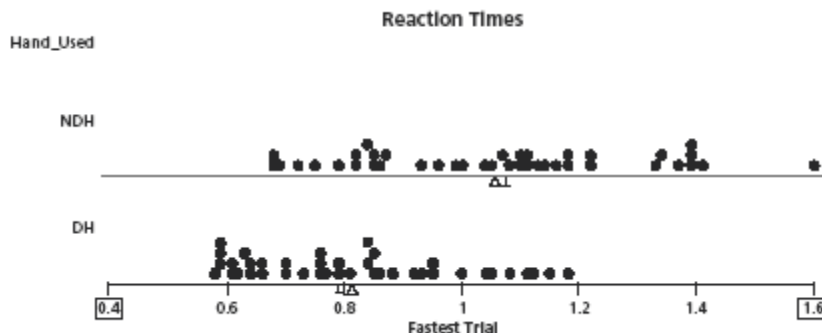
- How would you name the shape of this distribution (bell-shaped, skewed, uniform or flat, clumped with clusters in different locations)?
- Describe the variability in this distribution.
- Draw and label a line that shows where you estimate the median would be located. Explain your reasoning.
- Draw and label a line that shows where you estimate the mean would be located. Explain your reasoning.

102. Here is a graph that shows the typical hours of sleep per night during a week each of the 330 students had.



- How would you name the shape of this distribution (bell-shaped, skewed, uniform or flat, clumped with clusters in different locations)?
- Describe the variability in this distribution.
- Draw and label a line that shows where you estimate the median would be located. Explain your reasoning.
- Draw and label a line that shows where you estimate the mean would be located. Explain your reasoning.

103. Jeff looked at fastest trials for the 40 students when they used their dominant hands (DH) and when they used their non-dominant hands (NDH). Below are graphs that show the two distributions.



- a. Estimate these statistics from looking at the graphs.

Mean reaction time with DH: _____ Mean reaction time with NDH: _____

Median reaction time with DH: _____ Median reaction time with NDH: _____

Range of reaction times for DH: _____ Range of reaction times for NDH: _____

- b. Jeff wondered, “How much faster are students when they use their dominant hands (DH) than when they use their non-dominant hands (NDH)?” Write a response to Jeff’s question. Explain your reasoning. You can use the statistics you estimated in (a) and also talk about where data cluster, where there are gaps, and if there are any outliers.

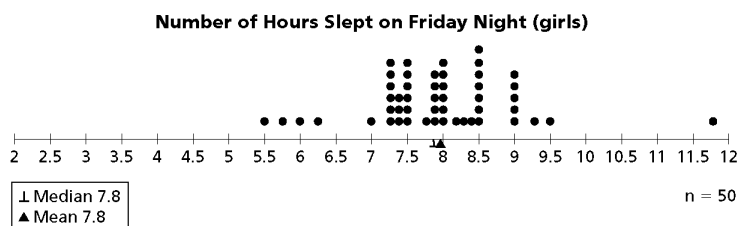
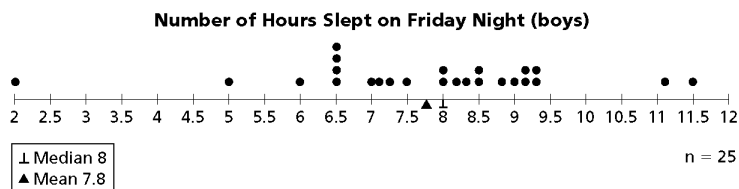
Use situations (a) -(c) below to answer the questions.

- Each carpenter’s helper measures and records the length of the same wooden plank in centimeters.
- Each student records the number of pets to answer the question: What is the typical number of pets for students in the class?
- Each student records the time spent playing video games in the last week to answer the question: “How much variability is there in the times spent playing video games?”

104. Are the data that are collected categorical or numerical?
105. For the situation, are the data likely to show a lot or a little variability? Explain your reasoning.
106. Six day’s temperatures in April have an average that is 12 degrees higher than six day’s temperatures in March. What is the difference between the sums of the temperatures?
107. Use the medians, means, and ranges given below. Compare the number of movies watched by boys with the number of movies watched by girls during the summer. Explain your reasoning.

Statistic	Number of Movies Watched by Boys During the Summer	Number of Movies Watched by Girls During the Summer
Mean	≈5.3	≈5.07
Median	4	3
Range	17	14

108. Below are two dot plots that display data about the number of hours boys slept and the number of hours girls slept on a Friday night. Means and medians are marked on each graph.



- a. Write two comparison statements comparing the number of hours the boys slept to the number of hours the girls slept.
 - b. What fraction of boys slept longer than the mean? What percent of boys slept longer than the mean?
 - c. What fraction of girls slept longer than the mean? What percent of girls slept longer than the mean?
 - d. The number of boys reporting sleep times is not the same as the number of girls reporting sleep times. If you made a frequency bar graph of each set of data, would you show the frequencies as counts or percents? Explain your thinking.
 - e. What is the typical number of hours slept for the boys on Friday night? Which statement seems to be a sensible answer? Explain your reasoning.
 - i. Use the mode: The typical number of hours slept on Friday night is 6.5 hours.
 - ii. Use the median: The typical number of hours slept on Friday night is 8 hours.
 - iii. None of the above: Write your own statement about what you consider to be the typical number of hours boys slept on Friday night.
 - f. If you added data from 10 more boys about the number of hours they slept on Friday night, what do you predict would happen to the median? The mean? The range? Explain your reasoning.
109. Ariel has a total of 320 points on all four of his exams. If these points are shared equally among the four exams, the result is 80 points per project—Ariel's mean exam score.
- a. What would Ariel's mean score be if he had a total of 372 points for the four exams?
 - b. Give four possible exam scores that would result in this mean score.
 - c. What is the range of the scores for these four exam scores? What does this tell you about the variability of the scores?

110. Five good friends have the following number of basketball cards:

Glen	352
Benny	347
Yari	265
Jillian	261
Mark	325

- a. What is the range of number of cards of the five friends? What does the range tell you about the variability in the amount of cards they have?
 - b. The five friends decided to share their cards equally. How many cards per friend will this be? Explain your reasoning.
 - c. The five friends forgot about another friend, Susanna, when cards were shared. Susanna has 261 cards, the same amount of cards as Jillian. If Susanna's cards are included with the others' cards and shared equally among the six friends, will the first five friends now receive less, the same as, or more than they did before Susanna's cards were included? Explain your reasoning.
111. Another group of five friends shared their basketball cards equally. The result was 364 cards per friend. Does this mean that one of the friends originally received 364 basketball cards? Explain your reasoning.
112. Four friends wanted to share their costs for lunch equally among themselves. Their meals cost \$4.50, \$3.50, \$4.20, \$3.50. Mandy said that because two of the meals cost the same you needed to only divide the total cost of the meals by 3. Enrico disagreed and said that no matter whether the meals cost the same amount, you would still divide them equally among the 4 friends. Do you agree with Mandy or Enrico? Explain your thinking.
113. John's baseball team made the following number of runs for their first 15 games: 0, 0, 0, 1, 1, 1, 1, 2, 2, 2, 3, 3, 4, 5, 8. To figure out the team's average runs per game, John said not to include the 0 runs because they did not increase the amount of their total runs. Do you agree with John's reasoning? Explain why or why not.
114. The following data are the number of hours of homework done by several students on a Monday night: 0.5, 0.5, 1, 1, 1, 1, 2, 3. If you replaced data from a student who did 0.5 hour of homework with one who did 2 hours of homework:
- a. Does the mean change? If so, how does it change and why?
 - b. Does the median change? If so, how does it change and why?
 - c. Does the range change? If so, how does it change and why?

115. Below are data from two bags of Crispy M&MTM candies that were opened.

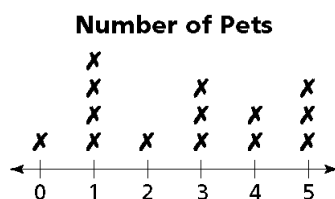
Bag	Green	Yellow	Orange	Blue	Brown	Red	Total
1	8	10	8	10	9	9	54
2	8	9	7	10	10	11	55

- Find the percent of each color for bags 1 and 2.
- Make a bar graph for each set of data that shows the percent of each color found in that bag of candies.
- For each graph, write two or more sentences describing the data displayed on the graph.
- Are there any similarities or differences in the patterns between the two bags of Crispy M&MTM candies that can be used to answer the question, “Is there some plan to the distribution of colors of Crispy M&MTM candies in a bag?” Explain your reasoning.
- Below are data from thirty bags of Crispy M&MTM candies that were opened. Make a bar graph for these data that shows the percent of each color found in the thirty bags of candies.

Bag	Green	Yellow	Orange	Blue	Brown	Red	Total
1–30	250	285	260	275	280	280	1630

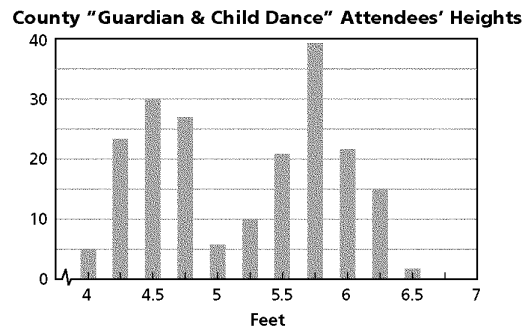
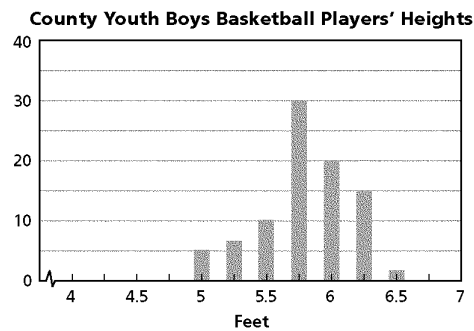
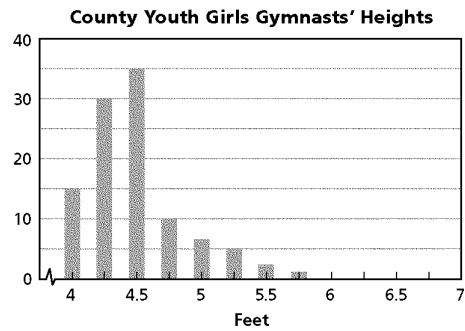
- Write two or more sentences describing the data displayed by the graph.
- How would you now answer the original question, “Is there some plan to the distribution of colors of Crispy M&MTM candies in a bag?”

116. Below is a copy of the distribution of the number of pets for Marie and her friends. The location of the mean is at 2.71 pets and the median is at 3 pets.



- What happens to the mean and the median if a friend with 3 pets is removed and her data is replaced with data from three new friends, each of whom has 1 pet? Why do you think this happens?
- What happens to the mean and the median in the original distribution if you remove a friend with 1 pet and replace her with a friend who has 4 pets? Why do you think this happens?

Use the following bar graphs.



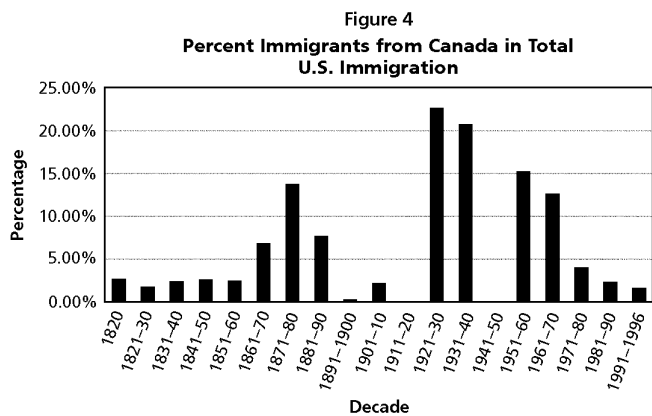
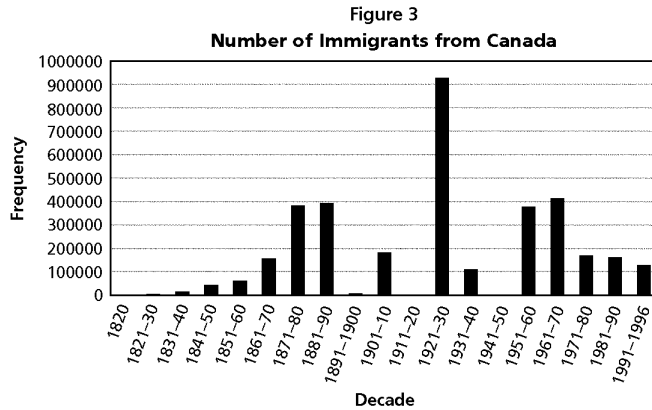
117. Compare the variability in heights in the following distributions. Be sure to discuss clusters and ranges in your comparisons.
118. Where do you predict the mean and median will be in each distribution? Explain your reasoning.

Use data from bags of the new M&M candies reported in the table below.

New M&M's® Candies							
Bag #	Green	Yellow	Orange	Blue	Brown	Red	Total
1	14	7	8	10	17	3	59
2	14	10	16	7	7	3	57
3	14	17	7	11	9	2	60
4	13	13	8	11	6	7	58
5	15	11	7	15	6	5	59
6	11	6	16	14	5	5	57
7	20	9	8	13	7	2	59
8	10	14	8	14	10	3	59
9	17	11	8	14	10	3	63
10	17	10	14	14	4	2	61
11	14	11	11	5	9	7	57
12	9	7	20	8	12	1	57
13	12	13	9	17	7	2	60
14	8	8	12	11	17	4	60
15	18	8	13	9	7	4	59
TOTAL							

119. **A.**
1. Make a bar graph for each set of data for Bags 1, 2, and 3. Each bar graph shows the percent of each color found in that bag of candies.
 2. Write two or more comparison statements that describe the data for the three bags of candy.
- B.** Determine the totals for each color of M&MTM candies found in all 15 bags.
1. Make a bar graph for these data that shows percent of each color found in the fifteen bags of candies.
 2. Describe the data by writing two or more comparison statements.
 3. Compare this graph with the graphs you made for the Bags 1, 2, and 3 of M&MTM candies. Is there some plan to the distribution of colors in bags of M&MTM candies? Explain your reasoning.

Use the table of data below.



120. a. In each of the decades from 1911-1920 and 1941-1950, how many people immigrated from Canada?
- b. Add these bars to a copy of the bar graph (Figure 3) “Number of Immigrants from Canada.”
- c. Which of the statements below are true?
- i. There are more immigrants who came to the U.S. in the decade between 1911-20 than in 1941-50.
 - ii. About the same number of immigrants came to the U.S. in the decade between 1911-20 and in the decade between 1941-50.
 - iii. The number of immigrants in the decade between 1911-20 is about 250,000 more than the number of immigrants who came to the U.S. in the decade between 1941-50.
 - iv. None of the above is true.
 - v. All of the above are true.

121. **a.** In each of the decades from 1911-1920 and 1941-1950, how many people were immigrants to the U.S. from all countries?
- b.** What percent of each of these numbers were immigrants from Canada?
- c.** Add these bars to a copy of the bar graph (Figure 4 on next page) “Percentage of Immigrants from Canada in Total U.S. Immigration.”
- d.** Write two comparison statements about how these data values are similar to or different from the data values for other decades.
122. How has the pattern of immigration from Canada to the United States changed between 1820 and 1996? Explain your reasoning.

123. Use the table of data below.

US Population by Region (in millions)

	Northeast	Midwest	South	West	TOTAL
1980	49.1	58.9	75.4	43.2	
1985	49.9	58.8	81.4	47.8	
1990	50.8	59.7	85.5	52.8	
1995	51.5	61.7	92.0	57.7	

Percent of US Population by Region

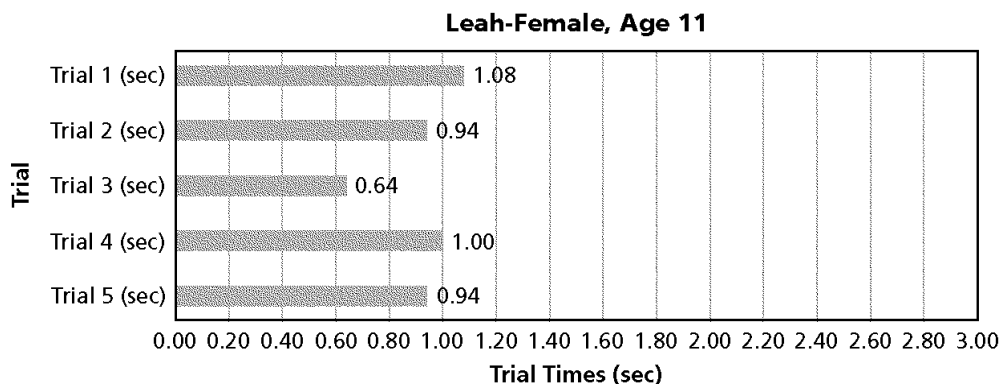
	Northeast	Midwest	South	West
1980				
1985				
1990				
1995				

- For each year, determine the total population and percent of the total population found in each region. Show this information in the Table: Percent of US Population by Region.
- Make a bar graph for each region showing the percent of population for each of the four years shown. You will have four bar graphs, each of which has four bars, one for each of the years 1980, 1985, 1990, and 1995.
- Which region had the greatest increase in numbers of people in the population from 1980 to 1995? Which region had the smallest increase in numbers of people in the population from 1980 to 1995?
- Which region had the greatest increase in percentage of total population from 1980 to 1995? Which region had the greatest decline in percentage of total population from 1980 to 1995?
- Write two or more comparison statements that describe the data for the four years.
- Which statements below are true?
 - The South had the most people in each year.
 - The population in the Northeast increased from 1980 to 1995.
 - The percentage of population in the Northeast increased from 1980 to 1995.
 - The distribution of population is more uneven in 1995 than in 1980.

124. Make a line plot, matching the criteria below, to show the distribution of hand widths in a class:
 There are 20 students in the class.
 The range of hand widths is from 8 cm to 12.5 cm.
 The mode hand width is 9.5 cm; there are 6 values at the mode.
 The median hand width is 9 cm.

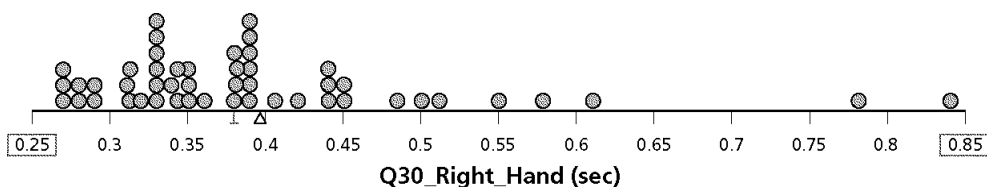
125. Make a line plot, matching the criteria below, to show the distribution of hand widths in a class:
 There are 20 students in the class
 The range of hand widths is from 8 cm to 12.5 cm.
 The mode hand width is 9.5 cm; there are 6 values at the mode.
 The median hand width is 10 cm.

126. Write three different statements that describe the variability in Leah's reaction times.

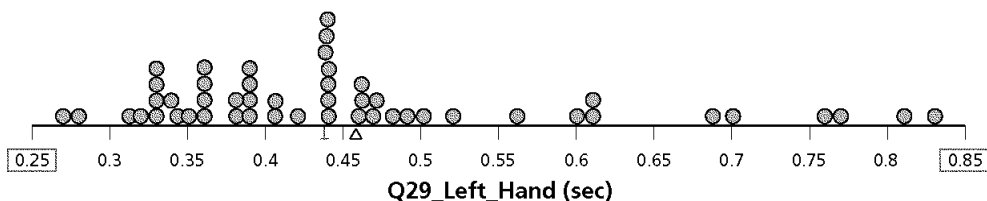


127. A sample of data from 50 students – 25 female students and 25 male students – was collected from an online database (<http://www.censusonline.net/>). The data found at this site come from students completing a survey that asks a number of different questions. Two questions ask students to respond to a stimulus, once with their right hands and once with their left hands. Their time to respond is recorded in seconds. Below are two graphs, one for RIGHT hand and one for LEFT hand response data.

- Are students quicker with their right hands or their left hands? Justify your reasoning.
- Are students more consistent with their right hands or their left hands? Justify your reasoning.
- We have been using data that look at a person's dominant hand and non-dominant hand in the Investigation. Is it possible that, for some of the students, their right hand was their non-dominant hand? Explain your reasoning.



The mean is 0.39702 sec and the median is 0.38 sec.



The mean is 0.45726 sec and the median is 0.4375 sec.

Claudia Steel- Summer Practice Answer Section

SHORT ANSWER

1. ANS:

$$6.8 \times 3 = 20.4$$

$$225 - 20.4 = 204.6 \text{ pounds left.}$$

PTS: 1

DIF: L2

REF: Accentuate the Negative | Check-Up

OBJ: Investigation 2: Adding and Subtracting Integers

NAT: NAEP N1b| NAEP N1i| NAEP N1j| NAEP N3g

STA: 7PA M7.A.3.1.1| 7PA M7.A.2.1.1 TOP: Problem 2.2 Introducing Subtraction of Integers

KEY: absolute value

2. ANS:

-3

PTS: 1

DIF: L2

REF: Accentuate the Negative | Check-Up

OBJ: Investigation 2: Adding and Subtracting Integers

NAT: NAEP N1g| NAEP N3a| NAEP N3f| NAEP N3g| NAEP N5e

STA: 7PA M7.A.3.1.1| 7PA M7.A.2.1.1 TOP: Problem 2.2 Introducing Subtraction of Integers

KEY: absolute value

3. ANS:

3

PTS: 1

DIF: L2

REF: Accentuate the Negative | Check-Up

OBJ: Investigation 2: Adding and Subtracting Integers

NAT: NAEP N1g| NAEP N3a| NAEP N3f| NAEP N3g| NAEP N5e

STA: 7PA M7.A.3.1.1| 7PA M7.A.2.1.1

TOP: Problem 2.3 Addition and Subtraction Relationships KEY: equivalent

4. ANS:

-1

PTS: 1

DIF: L2

REF: Accentuate the Negative | Check-Up

OBJ: Investigation 2: Adding and Subtracting Integers

NAT: NAEP N1g| NAEP N3a| NAEP N3f| NAEP N3g| NAEP N5e

STA: 7PA M7.A.3.1.1| 7PA M7.A.2.1.1

TOP: Problem 2.3 Addition and Subtraction Relationships KEY: equivalent

5. ANS:

19

PTS: 1

DIF: L2

REF: Accentuate the Negative | Check-Up

OBJ: Investigation 2: Adding and Subtracting Integers

NAT: NAEP N1g| NAEP N3a| NAEP N3f| NAEP N3g| NAEP N5e

STA: 7PA M7.A.3.1.1| 7PA M7.A.2.1.1

TOP: Problem 2.3 Addition and Subtraction Relationships KEY: equivalent

6. ANS:
4

PTS: 1 DIF: L2 REF: Accentuate the Negative | Check-Up
OBJ: Investigation 3: Multiplying and Dividing Integers
NAT: NAEP N3al NAEP N3dl NAEP N3fl NAEP N3gl NAEP N5e
STA: 7PA M7.A.3.1.1| 7PA M7.A.2.1.1 TOP: Problem 3.3 Introducing Division of Integers
KEY: quotient

7. ANS:
-150

PTS: 1 DIF: L2 REF: Accentuate the Negative | Check-Up
OBJ: Investigation 3: Multiplying and Dividing Integers
NAT: NAEP N3al NAEP N3dl NAEP N3fl NAEP N3gl NAEP N5e
STA: 7PA M7.A.3.1.1| 7PA M7.A.2.1.1
TOP: Problem 3.1 Introducing Multiplication of Integers KEY: product

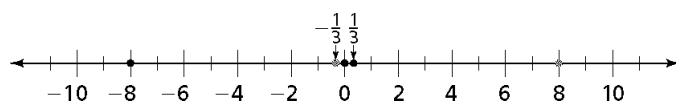
8. ANS:
60

PTS: 1 DIF: L2 REF: Accentuate the Negative | Check-Up
OBJ: Investigation 3: Multiplying and Dividing Integers
NAT: NAEP N3al NAEP N3dl NAEP N3fl NAEP N3gl NAEP N5e
STA: 7PA M7.A.3.1.1| 7PA M7.A.2.1.1
TOP: Problem 3.1 Introducing Multiplication of Integers KEY: product

9. ANS:
-9

PTS: 1 DIF: L2 REF: Accentuate the Negative | Check-Up
OBJ: Investigation 3: Multiplying and Dividing Integers
NAT: NAEP N3al NAEP N3dl NAEP N3fl NAEP N3gl NAEP N5e
STA: 7PA M7.A.3.1.1| 7PA M7.A.2.1.1 TOP: Problem 3.3 Introducing Division of Integers
KEY: quotient

10. ANS:



PTS: 1 DIF: L2 REF: Accentuate the Negative | Partner Quiz
OBJ: Investigation 1: Extending the Number System
NAT: NAEP N1bl NAEP N1il NAEP N1jl NAEP N3g
STA: 7PA M7.A.1.2.1| 7PA M7.A.2.1.1
TOP: Problem 1.2 Comparing and Ordering Positive and Negative Numbers
KEY: absolute value

11. ANS:

- a. -22
- b. 8
- c. -10
- d. -12

PTS: 1 DIF: L2 REF: Accentuate the Negative | Partner Quiz
 OBJ: Investigation 2: Adding and Subtracting Integers
 NAT: NAEP N1g| NAEP N3a| NAEP N3f| NAEP N3g| NAEP N5e
 STA: 7PA M7.A.3.1.1| 7PA M7.A.2.1.1
 TOP: Problem 2.1 Introducing Addition of Integers | Problem 2.2 Introducing Subtraction of Integers
 KEY: Commutative Property | absolute value

12. ANS:

Temperature at 8:00 A.M.	Temperature at 8:00 P.M.	Change in temperature From 8:00 A.M. to 8:00 P.M.
-8°	3°	11°
-2°	-13°	-11°
-13°	-2°	11°
-1°	14°	15°
6°	-2°	-8°
-9°	-5°	4°

PTS: 1 DIF: L2 REF: Accentuate the Negative | Partner Quiz
 OBJ: Investigation 1: Extending the Number System
 NAT: NAEP N1b| NAEP N1i| NAEP N1j| NAEP N3g STA: 7PA M7.D.2.1.2
 TOP: Problem 1.3 Using a Number Line Model KEY: number line

13. ANS:

- a. less than 500 pounds
- b. 2 pounds less (or -2 pounds)

PTS: 1 DIF: L2 REF: Accentuate the Negative | Question Bank
 OBJ: Investigation 1: Extending the Number System
 NAT: NAEP N1b| NAEP N1i| NAEP N1j| NAEP N3g
 STA: 7PA M7.A.1.2.1| 7PA M7.A.2.1.1
 TOP: Problem 1.2 Comparing and Ordering Positive and Negative Numbers
 KEY: absolute value

14. ANS:

- a. less than 800 pounds
- b. 5 pounds less (or -5 pounds)

PTS: 1 DIF: L2 REF: Accentuate the Negative | Question Bank
 OBJ: Investigation 1: Extending the Number System
 NAT: NAEP N1b| NAEP N1i| NAEP N1j| NAEP N3g
 STA: 7PA M7.A.1.2.1| 7PA M7.A.2.1.1
 TOP: Problem 1.2 Comparing and Ordering Positive and Negative Numbers
 KEY: absolute value

15. ANS:

(Note: Numbers should be from -10 to 10 , no number should be repeated, and the numbers must total -11). Possible answers: $-1, -2, -3, -4, -6, +5$ or $-10, -9, -1, +2, +3, +4$

PTS: 1 DIF: L2 REF: Accentuate the Negative | Question Bank
 OBJ: Investigation 1: Extending the Number System
 NAT: NAEP N1b| NAEP N1i| NAEP N1j| NAEP N3g
 STA: 7PA M7.A.1.2.1| 7PA M7.A.2.1.1
 TOP: Problem 1.2 Comparing and Ordering Positive and Negative Numbers
 KEY: absolute value

16. ANS:

$10 + 10 + 10 = 30$	$10 + -5 + -5 = 0$
$10 + 10 + 1 = 21$	$1 + 1 + 1 = 3$
$10 + 10 + -5 = 15$	$1 + 1 + -5 = -3$
$10 + 1 + 1 = 12$	$1 + -5 + -5 = -9$
$10 + 1 + -5 = 6$	$-5 + -5 + -5 = -15$

PTS: 1 DIF: L2 REF: Accentuate the Negative | Question Bank
 OBJ: Investigation 1: Extending the Number System
 NAT: NAEP N1b| NAEP N1i| NAEP N1j| NAEP N3g
 STA: 7PA M7.A.1.2.1| 7PA M7.A.2.1.1
 TOP: Problem 1.2 Comparing and Ordering Positive and Negative Numbers
 KEY: absolute value

17. ANS:

true; Possible explanation: If you have a negative number on a chip board (for example, 5 reds) and you add more negatives (3 or more reds), you will have a negative(8reds).

PTS: 1 DIF: L2 REF: Accentuate the Negative | Question Bank
 OBJ: Investigation 2: Adding and Subtracting Integers
 NAT: NAEP N1g| NAEP N3a| NAEP N3f| NAEP N3g| NAEP N5e
 STA: 7PA M7.A.3.1.1| 7PA M7.A.2.1.1 TOP: Problem 2.1 Introducing Addition of Integers
 KEY: Commutative Property

18. ANS:

false; Possible explanation: When you multiply two negative integers, the answer is always positive.

PTS: 1 DIF: L2 REF: Accentuate the Negative | Question Bank
 OBJ: Investigation 3: Multiplying and Dividing Integers
 NAT: NAEP N3a| NAEP N3d| NAEP N3f| NAEP N3g| NAEP N5e
 STA: 7PA M7.A.3.1.1| 7PA M7.A.2.1.1
 TOP: Problem 3.1 Introducing Multiplication of Integers KEY: product

19. ANS:

false; Possible explanation: Whether the sum is positive or negative depends on which of the two numbers has the greater absolute value.

PTS: 1 DIF: L2 REF: Accentuate the Negative | Question Bank
 OBJ: Investigation 2: Adding and Subtracting Integers
 NAT: NAEP N1gl NAEP N3al NAEP N3fl NAEP N3gl NAEP N5e
 STA: 7PA M7.A.3.1.1| 7PA M7.A.2.1.1
 TOP: Problem 2.3 Addition and Subtraction Relationships KEY: equivalent

20. ANS:

true; Possible explanation: You can think of multiplying a negative by a positive as adding the same negative integer together the number of times indicated by the positive integer.

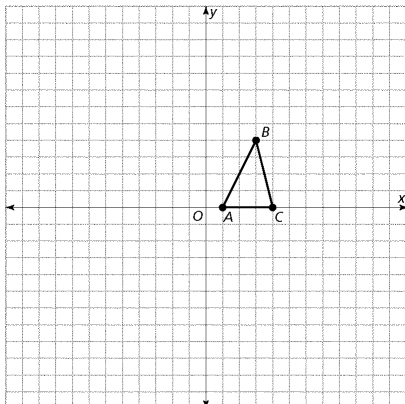
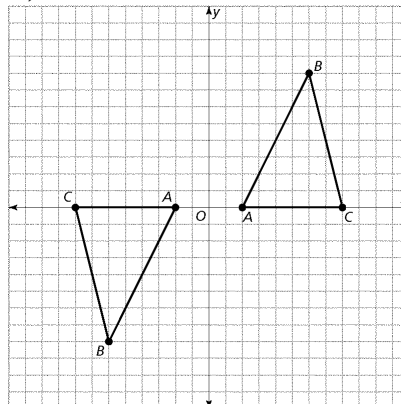
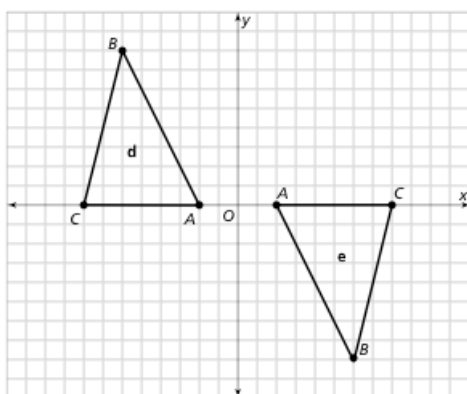
PTS: 1 DIF: L2 REF: Accentuate the Negative | Question Bank
 OBJ: Investigation 3: Multiplying and Dividing Integers
 NAT: NAEP N3al NAEP N3dl NAEP N3fl NAEP N3gl NAEP N5e
 STA: 7PA M7.A.3.1.1| 7PA M7.A.2.1.1
 TOP: Problem 3.1 Introducing Multiplication of Integers KEY: product

21. ANS:

-4 and -5 ($-4 + -5 = -9$ and $-4 - -5 = 1$)

PTS: 1 DIF: L2 REF: Accentuate the Negative | Question Bank
 OBJ: Investigation 2: Adding and Subtracting Integers
 NAT: NAEP N1gl NAEP N3al NAEP N3fl NAEP N3gl NAEP N5e
 STA: 7PA M7.A.3.1.1| 7PA M7.A.2.1.1
 TOP: Problem 2.3 Addition and Subtraction Relationships KEY: equivalent

22. ANS:

a.**b, c.****d, e.**

- f.** This triangle will have the same orientation as the original, but the side lengths will be three times as long.
- g.** This triangle will have lengths three times as long as the original's but will be in quadrant III. (Note: This could also be called a 180° rotation.)
- h.** This triangle will have lengths three times as long as the original's but will be in quadrant II. (Note: This is a reflection across the y-axis.)

PTS: 1 DIF: L2 REF: Accentuate the Negative | Question Bank
 OBJ: Investigation 2: Adding and Subtracting Integers
 NAT: NAEP N1g| NAEP N3a| NAEP N3f| NAEP N3g| NAEP N5e
 STA: 7PA M7.D.3.1.1 TOP: Problem 2.5 Coordinate Graphing
 KEY: Quadrant I | II | III | IV

23. ANS:

 $-9^\circ, -2^\circ, -1^\circ, 0^\circ, 1^\circ, 8^\circ, 14^\circ$

PTS: 1 DIF: L2 REF: Accentuate the Negative | Question Bank
 OBJ: Investigation 1: Extending the Number System
 NAT: NAEP N1b| NAEP N1i| NAEP N1j| NAEP N3g
 TOP: Problem 1.3 Using a Number Line Model
 STA: 7PA M7.D.2.1.2
 KEY: number line

24. ANS:

a. $6 + 22 = 28^\circ$

b. $6 - 7 = -1^\circ$

PTS: 1 DIF: L2 REF: Accentuate the Negative | Question Bank

OBJ: Investigation 1: Extending the Number System

NAT: NAEP N1b| NAEP N1i| NAEP N1j| NAEP N3g STA: 7PA M7.D.2.1.2

TOP: Problem 1.3 Using a Number Line Model KEY: number line

25. ANS:

a. $-6 + 13 = 7^\circ$

b. $-6 - 15 = -21^\circ$

PTS: 1 DIF: L2 REF: Accentuate the Negative | Question Bank

OBJ: Investigation 1: Extending the Number System

NAT: NAEP N1b| NAEP N1i| NAEP N1j| NAEP N3g STA: 7PA M7.D.2.1.2

TOP: Problem 1.3 Using a Number Line Model KEY: number line

26. ANS:

a. 10 yards gained (+10)

b. 30 yards gained (+30)

PTS: 1 DIF: L2 REF: Accentuate the Negative | Question Bank

OBJ: Investigation 2: Adding and Subtracting Integers

NAT: NAEP N1g| NAEP N3a| NAEP N3f| NAEP N3g| NAEP N5e

STA: 7PA M7.A.3.1.1| 7PA M7.A.2.1.1

TOP: Problem 2.3 Addition and Subtraction Relationships KEY: equivalent

27. ANS:

Possible answers: -1001 , -1003 , -1000.2

PTS: 1 DIF: L2 REF: Accentuate the Negative | Question Bank

OBJ: Investigation 1: Extending the Number System

NAT: NAEP N1b| NAEP N1i| NAEP N1j| NAEP N3g

STA: 7PA M7.A.1.2.1| 7PA M7.A.2.1.1

TOP: Problem 1.2 Comparing and Ordering Positive and Negative Numbers

KEY: absolute value

28. ANS:

a. 450 points; $650 - 200 = 450$

b. 800 points; $650 - -150 = 800$

c. 350 points; $200 - -150 = 350$

PTS: 1 DIF: L2 REF: Accentuate the Negative | Question Bank

OBJ: Investigation 2: Adding and Subtracting Integers

NAT: NAEP N1g| NAEP N3a| NAEP N3f| NAEP N3g| NAEP N5e

STA: 7PA M7.A.3.1.1| 7PA M7.A.2.1.1

TOP: Problem 2.3 Addition and Subtraction Relationships KEY: equivalent

29. ANS:
35 units

PTS: 1 DIF: L2 REF: Accentuate the Negative | Question Bank
OBJ: Investigation 1: Extending the Number System
NAT: NAEP N1b| NAEP N1i| NAEP N1j| NAEP N3g STA: 7PA M7.D.2.1.2
TOP: Problem 1.3 Using a Number Line Model KEY: number line

30. ANS:
20

PTS: 1 DIF: L2 REF: Accentuate the Negative | Question Bank
OBJ: Investigation 1: Extending the Number System
NAT: NAEP N1b| NAEP N1i| NAEP N1j| NAEP N3g STA: 7PA M7.D.2.1.2
TOP: Problem 1.3 Using a Number Line Model KEY: number line

31. ANS:
17

PTS: 1 DIF: L2 REF: Accentuate the Negative | Question Bank
OBJ: Investigation 1: Extending the Number System
NAT: NAEP N1b| NAEP N1i| NAEP N1j| NAEP N3g STA: 7PA M7.D.2.1.2
TOP: Problem 1.3 Using a Number Line Model KEY: number line

32. ANS:
-22

PTS: 1 DIF: L2 REF: Accentuate the Negative | Question Bank
OBJ: Investigation 2: Adding and Subtracting Integers
NAT: NAEP N1g| NAEP N3a| NAEP N3f| NAEP N3g| NAEP N5e
STA: 7PA M7.A.3.1.1| 7PA M7.A.2.1.1
TOP: Problem 2.3 Addition and Subtraction Relationships
KEY: adding integers | subtraction integers

33. ANS:
-9

PTS: 1 DIF: L2 REF: Accentuate the Negative | Question Bank
OBJ: Investigation 2: Adding and Subtracting Integers
NAT: NAEP N1g| NAEP N3a| NAEP N3f| NAEP N3g| NAEP N5e
STA: 7PA M7.A.3.1.1| 7PA M7.A.2.1.1
TOP: Problem 2.3 Addition and Subtraction Relationships
KEY: adding integers | subtracting integers

34. ANS:
22

PTS: 1 DIF: L2 REF: Accentuate the Negative | Question Bank
OBJ: Investigation 2: Adding and Subtracting Integers
NAT: NAEP N1g| NAEP N3a| NAEP N3f| NAEP N3g| NAEP N5e
STA: 7PA M7.A.3.1.1| 7PA M7.A.2.1.1
TOP: Problem 2.3 Addition and Subtraction Relationships
KEY: adding integers | subtracting integers

35. ANS:
9

PTS: 1 DIF: L2 REF: Accentuate the Negative | Question Bank
OBJ: Investigation 2: Adding and Subtracting Integers
NAT: NAEP N1gl NAEP N3al NAEP N3fl NAEP N3gl NAEP N5e
STA: 7PA M7.A.3.1.1| 7PA M7.A.2.1.1
TOP: Problem 2.3 Addition and Subtraction Relationships
KEY: adding integers | subtracting integers

36. ANS:
-174

PTS: 1 DIF: L2 REF: Accentuate the Negative | Question Bank
OBJ: Investigation 2: Adding and Subtracting Integers
NAT: NAEP N1gl NAEP N3al NAEP N3fl NAEP N3gl NAEP N5e
STA: 7PA M7.A.3.1.1| 7PA M7.A.2.1.1
TOP: Problem 2.3 Addition and Subtraction Relationships
KEY: equivalent | adding integers | subtracting integers

37. ANS:
189

PTS: 1 DIF: L2 REF: Accentuate the Negative | Question Bank
OBJ: Investigation 2: Adding and Subtracting Integers
NAT: NAEP N1gl NAEP N3al NAEP N3fl NAEP N3gl NAEP N5e
STA: 7PA M7.A.3.1.1| 7PA M7.A.2.1.1
TOP: Problem 2.3 Addition and Subtraction Relationships
KEY: equivalent | adding integers | subtracting integers

38. ANS:
24

PTS: 1 DIF: L2 REF: Accentuate the Negative | Question Bank
OBJ: Investigation 2: Adding and Subtracting Integers
NAT: NAEP N1gl NAEP N3al NAEP N3fl NAEP N3gl NAEP N5e
STA: 7PA M7.A.3.1.1| 7PA M7.A.2.1.1
TOP: Problem 2.3 Addition and Subtraction Relationships
KEY: equivalent | adding integers | subtracting integers

39. ANS:
-8

PTS: 1 DIF: L2 REF: Accentuate the Negative | Question Bank
OBJ: Investigation 2: Adding and Subtracting Integers
NAT: NAEP N1gl NAEP N3al NAEP N3fl NAEP N3gl NAEP N5e
STA: 7PA M7.A.3.1.1| 7PA M7.A.2.1.1
TOP: Problem 2.3 Addition and Subtraction Relationships
KEY: equivalent | adding integers | subtracting integers

40. ANS:

a. $-7 \times -1.5 = 10.5^\circ$

b. $-6 \times -1.5 = -9^\circ$

c. $6 \div 1.5 = 4$ hours ago

d. $8 \div 1.5 = 5\frac{1}{3}$ hours; or between 5 and 6 hours from now; or 5 hours, 20 minutes from now

PTS: 1 DIF: L2 REF: Accentuate the Negative | Question Bank

OBJ: Investigation 1: Extending the Number System

NAT: NAEP N1b| NAEP N1i| NAEP N1j| NAEP N3g

STA: 7PA M7.D.2.1.2

TOP: Problem 1.3 Using a Number Line Model

KEY: number line

41. ANS:

a. floor 7

b. floor -8

c. They are both 3 floors from -2

PTS: 1 DIF: L2 REF: Accentuate the Negative | Question Bank

OBJ: Investigation 1: Extending the Number System

NAT: NAEP N1b| NAEP N1i| NAEP N1j| NAEP N3g

STA: 7PA M7.D.2.1.2

TOP: Problem 1.3 Using a Number Line Model

KEY: number line

42. ANS:

a. 2

b. 1

c. 0

d. 1

e. 2

f. 1

g. 0

h. 1

.

PTS: 1 DIF: L2

REF: Accentuate the Negative | Additional Practice Investigation 1

OBJ: Investigation 1: Extending the Number System

NAT: NAEP N1b| NAEP N1i| NAEP N1j| NAEP N3g

STA: 7PA M7.A.1.2.1| 7PA M7.A.2.1.1

TOP: Problem 1.2 Comparing and Ordering Positive and Negative Numbers

KEY: absolute value

43. ANS:

a. 0

b. 0

c. 0

d. 0

e. all values are 0; there are equal numbers of black and red chips

PTS: 1 DIF: L2

REF: Accentuate the Negative | Additional Practice Investigation 1

OBJ: Investigation 1: Extending the Number System

NAT: NAEP N1b| NAEP N1i| NAEP N1j| NAEP N3g

STA: 7PA M7.A.1.2.1| 7PA M7.A.2.1.1

TOP: Problem 1.2 Comparing and Ordering Positive and Negative Numbers

KEY: absolute value | positive numbers | negative numbers

44. ANS:

Answers will vary.

PTS: 1 DIF: L2

REF: Accentuate the Negative | Additional Practice Investigation 1

OBJ: Investigation 1: Extending the Number System

NAT: NAEP N1b| NAEP N1i| NAEP N1j| NAEP N3g

STA: 7PA M7.A.1.2.1| 7PA M7.A.2.1.1

TOP: Problem 1.2 Comparing and Ordering Positive and Negative Numbers

KEY: absolute value | positive numbers | negative numbers

45. ANS:

The value did not change; Sarah added a value equal to 0.

PTS: 1 DIF: L2

REF: Accentuate the Negative | Additional Practice Investigation 1

OBJ: Investigation 1: Extending the Number System

NAT: NAEP N1b| NAEP N1i| NAEP N1j| NAEP N3g

STA: 7PA M7.A.1.2.1| 7PA M7.A.2.1.1

TOP: Problem 1.2 Comparing and Ordering Positive and Negative Numbers

KEY: absolute value | positive numbers | negative numbers

46. ANS:

The value decreased by 3; there are 3 more red chips than black chips

PTS: 1 DIF: L2

REF: Accentuate the Negative | Additional Practice Investigation 1

OBJ: Investigation 1: Extending the Number System

NAT: NAEP N1b| NAEP N1i| NAEP N1j| NAEP N3g

STA: 7PA M7.A.1.2.1| 7PA M7.A.2.1.1

TOP: Problem 1.2 Comparing and Ordering Positive and Negative Numbers

KEY: absolute value | positive numbers | negative numbers

47. ANS:

200 points; answered correctly

PTS: 1 DIF: L2

REF: Accentuate the Negative | Additional Practice Investigation 1

OBJ: Investigation 1: Extending the Number System

NAT: NAEP N1b| NAEP N1i| NAEP N1j| NAEP N3g

STA: 7PA M7.D.2.1.2

TOP: Problem 1.3 Using a Number Line Model

KEY: number line

48. ANS:

The original board had 1 black chip and 3 red chips. The addition sentence would be $-2 + 7 = 5$.

PTS: 1 DIF: L2

REF: Accentuate the Negative | Additional Practice Investigation 1

OBJ: Investigation 1: Extending the Number System

NAT: NAEP N1b| NAEP N1i| NAEP N1j| NAEP N3g

STA: 7PA M7.A.1.2.1| 7PA M7.A.2.1.1

TOP: Problem 1.2 Comparing and Ordering Positive and Negative Numbers

KEY: absolute value

49. ANS:

The original board had 8 black chips and 7 red chips. The addition sentence would be $1 + -5 = -4$.

PTS: 1 DIF: L2

REF: Accentuate the Negative | Additional Practice Investigation 1

OBJ: Investigation 1: Extending the Number System

NAT: NAEP N1b| NAEP N1i| NAEP N1j| NAEP N3g

STA: 7PA M7.A.1.2.1| 7PA M7.A.2.1.1

TOP: Problem 1.2 Comparing and Ordering Positive and Negative Numbers

KEY: absolute value

50. ANS:

The original board had 3 black chips and 1 red chip. The addition sentence would be $2 + 2 + -2 = 2$.

PTS: 1 DIF: L2

REF: Accentuate the Negative | Additional Practice Investigation 1

OBJ: Investigation 1: Extending the Number System

NAT: NAEP N1b| NAEP N1i| NAEP N1j| NAEP N3g

STA: 7PA M7.A.1.2.1| 7PA M7.A.2.1.1

TOP: Problem 1.2 Comparing and Ordering Positive and Negative Numbers

KEY: absolute value

51. ANS:

The original board had 2 black chips and 0 red chips. The addition sentence would be $2 + 5 + -8 = -1$.

PTS: 1 DIF: L2

REF: Accentuate the Negative | Additional Practice Investigation 1

OBJ: Investigation 1: Extending the Number System

NAT: NAEP N1b| NAEP N1i| NAEP N1j| NAEP N3g

STA: 7PA M7.A.1.2.1| 7PA M7.A.2.1.1

TOP: Problem 1.2 Comparing and Ordering Positive and Negative Numbers

KEY: absolute value

52. ANS:

The original board had 0 black chips and 3 red chips. The addition sentence would be $-3 + 6 + -8 = -5$.

PTS: 1 DIF: L2

REF: Accentuate the Negative | Additional Practice Investigation 1

OBJ: Investigation 1: Extending the Number System

NAT: NAEP N1b| NAEP N1i| NAEP N1j| NAEP N3g

STA: 7PA M7.A.1.2.1| 7PA M7.A.2.1.1

TOP: Problem 1.2 Comparing and Ordering Positive and Negative Numbers

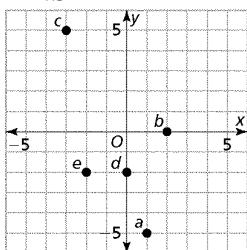
KEY: absolute value

53. ANS:

$$-\frac{3}{2}, -\frac{9}{8}, 0, \frac{2}{5}, \frac{8}{7}$$

PTS: 1 DIF: L2 REF: Accentuate the Negative | Unit Test
 OBJ: Investigation 1: Extending the Number System
 NAT: NAEP N1b| NAEP N1i| NAEP N1j| NAEP N3g
 STA: 7PA M7.A.1.2.1| 7PA M7.A.2.1.1
 TOP: Problem 1.2 Comparing and Ordering Positive and Negative Numbers
 KEY: absolute value

54. ANS:



PTS: 1 DIF: L2 REF: Accentuate the Negative | Unit Test
 OBJ: Investigation 2: Adding and Subtracting Integers
 NAT: NAEP N1g| NAEP N3a| NAEP N3f| NAEP N3g| NAEP N5e
 STA: 7PA M7.D.3.1.1 TOP: Problem 2.5 Coordinate Graphing
 KEY: Quadrant I | Quadrant II | Quadrant III | Quadrant IV

55. ANS:

- a. Possible answer: Students prefer Evian Water to Ocean Spray during the game by a ratio of 40 to 10 or 4 to 1.
 b. Possible answer: 58.3% of the students prefer Gatorade to the other drinks during the game.

PTS: 1 DIF: L2 REF: Comparing and Scaling | Check-Up
 OBJ: Investigation 1: Making Comparisons
 NAT: NAEP N1e| NAEP N3a| NAEP N4a
 STA: 7PA M7.A.2.2.1| 7PA M7.A.2.2.2| 7PA M7.A.2.2.3
 TOP: Problem 1.1 Exploring Ratios and Rates KEY: ratio

56. ANS:

- a. Possible answer: $\frac{2}{3}$ of the students prefer Ocean Spray to the other drinks after the game.
 b. Possible answer: 20 fewer students prefer Gatorade to Evian Water after the game.

PTS: 1 DIF: L2 REF: Comparing and Scaling | Check-Up
 OBJ: Investigation 1: Making Comparisons
 NAT: NAEP N1e| NAEP N3a| NAEP N4a
 STA: 7PA M7.A.2.2.1| 7PA M7.A.2.2.2| 7PA M7.A.2.2.3
 TOP: Problem 1.1 Exploring Ratios and Rates KEY: ratio

57. ANS:

- a. 70 to 40
- b. 35 to 20 or 140 to 80 or 175 to 100

PTS: 1 DIF: L2 REF: Comparing and Scaling | Check-Up
 OBJ: Investigation 2: Comparing Ratios Percents and Fractions
 NAT: NAEP N4b| NAEP N4c| NAEP N5f
 STA: 7PA M7.A.1.2.1| 7PA M7.A.2.2.1 TOP: Problem 2.2 More Comparison Strategies

58. ANS:

- a. Not accurate. Should be 10 to 40 or 1 to 4 OR Students might say that the order of the ratio should be switched to “Evian Water to Ocean Spray”.
- b. Accurate.
- c. Accurate.

PTS: 1 DIF: L2 REF: Comparing and Scaling | Check-Up
 OBJ: Investigation 2: Comparing Ratios Percents and Fractions
 NAT: NAEP N1e| NAEP N3a| NAEP N4a
 STA: 7PA M7.A.1.2.1| 7PA M7.A.2.2.1 TOP: Problem 1.2 Analyzing Comparison Statements

59. ANS:

- a. 198
- b. Ratio, percent, fraction, or difference may be used as long as explanation is reasonable.

PTS: 1 DIF: L2 REF: Comparing and Scaling | Check-Up
 OBJ: Investigation 2: Comparing Ratios Percents and Fractions
 NAT: NAEP N4b| NAEP N4c| NAEP N5f
 STA: 7PA M7.A.2.2.1| 7PA M7.A.2.2.2| 7PA M7.A.2.2.3
 TOP: Problem 2.3 Scaling Ratios

60. ANS:

4 burgers cost \$1.39
 1 burger costs \$0.3475
 30 burgers cost \$10.425 or \$10.43
 or
 30 burgers / 4 per pound = 7.5 pounds
 $7.5 \times \$1.39 = \10.425 or \$10.43

PTS: 1 DIF: L2 REF: Comparing and Scaling | Check-Up
 OBJ: Investigation 3: Comparing and Scaling Rates
 NAT: NAEP N11| NAEP N1a| NAEP N2a
 STA: 7PA M7.A.2.2.2| 7PA M7.A.2.2.3 TOP: Problem 3.1 Making and Using a Rate Table
 KEY: rates | unit rate

61. ANS:

10 patties for \$4.99
30 patties for \$14.97

PTS: 1 DIF: L2 REF: Comparing and Scaling | Quiz
OBJ: Investigation 3: Comparing and Scaling Rates
NAT: NAEP N1| NAEP N1a| NAEP N2a
STA: 7PA M7.A.2.2.2| 7PA M7.A.2.2.3 TOP: Problem 3.1 Making and Using a Rate Table
KEY: rates | unit rate

62. ANS:

Streamline Bulky
6 cans for \$1.99
24 cans for \$7.96 24 cans for \$6.99

PTS: 1 DIF: L2 REF: Comparing and Scaling | Quiz
OBJ: Investigation 3: Comparing and Scaling Rates
NAT: NAEP N1| NAEP N1a| NAEP N2a
STA: 7PA M7.A.2.2.2| 7PA M7.A.2.2.3 TOP: Problem 3.3 Unit Rates and Equations
KEY: rates | unit rate | variables | independent variable | dependent variable | equation

63. ANS:

a. $x = 16$ **b.** $x = 24$ **c.** $x = 1$
d. $x = 9$ **e.** $x = 15$ **f.** $x = 21$

PTS: 1 DIF: L2 REF: Comparing and Scaling | Question Bank
OBJ: Investigation 4: Making Sense of Proportions
NAT: NAEP N1d| NAEP M1k| NAEP A4b
STA: 7PA M7.A.2.2.2| 7PA M7.A.2.2.3
TOP: Problem 4.1 Setting Up and Solving Proportions KEY: proportion

64. ANS:

Since 2 out of 5 students are girls, the school has $\frac{2}{5} \times 623 =$ about 249 girls.

PTS: 1 DIF: L2 REF: Comparing and Scaling | Question Bank
OBJ: Investigation 4: Making Sense of Proportions
NAT: NAEP N1d| NAEP M1k| NAEP A4b
STA: 7PA M7.A.2.2.2| 7PA M7.A.2.2.3
TOP: Problem 4.3 Developing Strategies for Solving Proportions

65. ANS:

$\frac{623}{25} = 25$ teachers

PTS: 1 DIF: L2 REF: Comparing and Scaling | Question Bank
OBJ: Investigation 4: Making Sense of Proportions
NAT: NAEP N1d| NAEP M1k| NAEP A4b
STA: 7PA M7.A.2.2.2| 7PA M7.A.2.2.3
TOP: Problem 4.3 Developing Strategies for Solving Proportions

66. ANS:

- a. The Giant Foot (with an area of $2 \times 12 \times 12 = 288 \text{ in}^2$ per dollar, while two Wee Czar's pizzas (with an area of $2 \times \pi \times 36 = 288 \text{ in}^2$) is $\frac{288 \text{ in}^2}{\$8.99} = 32.0$ per dollar, so the Giant Foot gives you more pizza for your money.
- b. Since $\frac{288}{226} = 1.27$, the Giant Foot is actually about 27% larger than two Wee Czar's pizzas.

PTS: 1 DIF: L2 REF: Comparing and Scaling | Question Bank
 OBJ: Investigation 1: Making Comparisons
 NAT: NAEP N1el NAEP N3al NAEP N4a
 STA: 7PA M7.A.1.2.1| 7PA M7.A.2.2.1 TOP: Problem 1.2 Analyzing Comparison Statements

67. ANS:

The 2-L bottles are $\frac{8\text{L}}{\$4.99} = 1.6 \text{ L/dollar}$, and the $\frac{1}{2}$ -L bottles are $\frac{4\text{L}}{\$1.99} = 2.0 \text{ L/dollar}$, so the 8-pack of $\frac{1}{2}$ -L bottles is the better buy.

PTS: 1 DIF: L2 REF: Comparing and Scaling | Question Bank
 OBJ: Investigation 3: Comparing and Scaling Rates
 NAT: NAEP N1ll NAEP N1al NAEP N2a
 STA: 7PA M7.A.2.2.2| 7PA M7.A.2.2.3 TOP: Problem 3.3 Unit Rates and Equations
 KEY: rates | unit rate | variables | independent variable | dependent variable | equation

68. ANS:

- a. Possible answer: The earth's water surface is about 2.4 times its land surface.
- b. About = 70.6% of the earth's surface is water.
- c. Answers will vary. For example: South Dakota has a total area of 77,121, so the earth's surface area is about $196,900,000 \div 77,121 = 2553$ times that of South Dakota's.

PTS: 1 DIF: L2 REF: Comparing and Scaling | Question Bank
 OBJ: Investigation 1: Making Comparisons
 NAT: NAEP N1el NAEP N3al NAEP N4a STA: 7PA M7.A.2.2.1
 TOP: Problem 1.3 Writing Comparison Statements

69. ANS:

The table shows the unit price for each item at each store. Darren's has the best unit price on handkerchiefs, greeting cards, and audiocassette tapes; ballpoint pens cost essentially the same at the two stores. (Students may argue that pens are cheaper at U-Rule; a point that should be discussed is that the difference is negligible unless a large quantity is purchased.)

PTS: 1 DIF: L2 REF: Comparing and Scaling | Question Bank
 OBJ: Investigation 3: Comparing and Scaling Rates
 NAT: NAEP N1ll NAEP N1al NAEP N2a
 STA: 7PA M7.A.2.2.2| 7PA M7.A.2.2.3 TOP: Problem 3.3 Unit Rates and Equations
 KEY: rates. unit rate | variables | independent variable | dependent variable | equation

70. ANS:

Depending on where the distance is measured, it is about 13.5 cm from coast to coast, or If there were a direct road, it would take = about 48 hours to drive from coast to coast. Since there is no direct road, it will take longer.

PTS: 1 DIF: L2 REF: Comparing and Scaling | Question Bank
 OBJ: Investigation 3: Comparing and Scaling Rates
 NAT: NAEP N1| NAEP N1a| NAEP N2a
 STA: 7PA M7.A.2.2.2| 7PA M7.A.2.2.3 TOP: Problem 3.2 Finding Rates

71. ANS:

Possible answer: From Seattle to Los Angeles, it is $4.9 \text{ cm} \times 195 \text{ mi/cm} = \text{about } 956 \text{ mi}$, so it would take the plane about $\frac{956}{500} = \text{about } 2 \text{ h}$.

PTS: 1 DIF: L2 REF: Comparing and Scaling | Question Bank
 OBJ: Investigation 3: Comparing and Scaling Rates
 NAT: NAEP N1| NAEP N1a| NAEP N2a
 STA: 7PA M7.A.2.2.2| 7PA M7.A.2.2.3 TOP: Problem 3.2 Finding Rates

72. ANS:

Possible answer: From Columbus, Ohio (near the center of the state), it is about $7.2 \text{ cm} \times = 1404 \text{ mi}$ to Chihuahua.

PTS: 1 DIF: L2 REF: Comparing and Scaling | Question Bank
 OBJ: Investigation 3: Comparing and Scaling Rates
 NAT: NAEP N1| NAEP N1a| NAEP N2a
 STA: 7PA M7.A.2.2.2| 7PA M7.A.2.2.3 TOP: Problem 3.2 Finding Rates

73. ANS:

E.T. earned about $\frac{400}{240} = \frac{5}{3}$ or 1.67 times what *Raiders* earned.

PTS: 1 DIF: L2 REF: Comparing and Scaling | Question Bank
 OBJ: Investigation 1: Making Comparisons
 NAT: NAEP N1e| NAEP N3a| NAEP N4a
 STA: 7PA M7.A.2.2.2| 7PA M7.A.2.2.3 TOP: Problem 1.3 Writing Comparison Statements

74. ANS:

Forrest Gump earned about $\frac{300}{3000}$ or $\frac{1}{10}$ of the total earnings of the top 10 movies.

PTS: 1 DIF: L2 REF: Comparing and Scaling | Question Bank
 OBJ: Investigation 1: Making Comparisons
 NAT: NAEP N1e| NAEP N3a| NAEP N4a
 STA: 7PA M7.A.2.2.2| 7PA M7.A.2.2.3 TOP: Problem 1.3 Writing Comparison Statements

75. ANS:

Jurassic Park earned about $\frac{350}{250} = \frac{7}{5}$ of the amount earned by *Batman*.

PTS: 1 DIF: L2 REF: Comparing and Scaling | Question Bank
 OBJ: Investigation 1: Making Comparisons
 NAT: NAEP N1el NAEP N3al NAEP N4a
 STA: 7PA M7.A.2.2.2| 7PA M7.A.2.2.3 TOP: Problem 1.3 Writing Comparison Statements

76. ANS:

Star Wars earned about $\frac{322}{2991} = 0.11$ of the total earnings of the top 10 movies.

PTS: 1 DIF: L2 REF: Comparing and Scaling | Question Bank
 OBJ: Investigation 1: Making Comparisons
 NAT: NAEP N1el NAEP N3al NAEP N4a
 STA: 7PA M7.A.2.2.2| 7PA M7.A.2.2.3 TOP: Problem 1.3 Writing Comparison Statements

77. ANS:

Possible answers: There was an increase of over a quarter of a million people (286,788). As a ratio, there was about a $\frac{286,788}{8,863,052} = 3.2\%$ increase.

PTS: 1 DIF: L2 REF: Comparing and Scaling | Question Bank
 OBJ: Investigation 2: Comparing Ratios Percents and Fractions
 NAT: NAEP N4bl NAEP N4cl NAEP N5f
 STA: 7PA M7.A.1.2.1| 7PA M7.A.2.2.1 TOP: Problem 2.2 More Comparison Strategies

78. ANS:

The population of Maricopa County increased by $\frac{224,509}{2,122,101} = 10.6\%$.

PTS: 1 DIF: L2 REF: Comparing and Scaling | Question Bank
 OBJ: Investigation 2: Comparing Ratios Percents and Fractions
 NAT: NAEP N4bl NAEP N4cl NAEP N5f
 STA: 7PA M7.A.1.2.1| 7PA M7.A.2.2.1 TOP: Problem 2.2 More Comparison Strategies

79. ANS:

Kings County had a 1.3% decrease, Wayne County had a 2.2% decrease, Cuyahoga County had a 0.6% decrease, and Allegheny County had a 1.2% decrease.

PTS: 1 DIF: L2 REF: Comparing and Scaling | Question Bank
 OBJ: Investigation 2: Comparing Ratios Percents and Fractions
 NAT: NAEP N4bl NAEP N4cl NAEP N5f
 STA: 7PA M7.A.1.2.1| 7PA M7.A.2.2.1 TOP: Problem 2.2 More Comparison Strategies

80. ANS:

Possible answer: Earth and Mars take about the same amount of time to turn on their axes.

PTS: 1 DIF: L2 REF: Comparing and Scaling | Question Bank
 OBJ: Investigation 2: Comparing Ratios Percents and Fractions
 NAT: NAEP N4b| NAEP N4c| NAEP N5f
 STA: 7PA M7.A.2.2.1| 7PA M7.A.2.2.2| 7PA M7.A.2.2.3
 TOP: Problem 2.3 Scaling Ratios KEY: scaling up | scaling down

81. ANS:

Possible answer: Planets closer to the Sun take less time to circle the Sun. Some take less than 1 year, while others take more than 100 years.

PTS: 1 DIF: L2 REF: Comparing and Scaling | Question Bank
 OBJ: Investigation 2: Comparing Ratios Percents and Fractions
 NAT: NAEP N4b| NAEP N4c| NAEP N5f
 STA: 7PA M7.A.2.2.1| 7PA M7.A.2.2.2| 7PA M7.A.2.2.3
 TOP: Problem 2.3 Scaling Ratios KEY: scaling up | scaling down

82. ANS:

- a. Sun's diameter: = about 109 in.
- b. Jupiters's diameter: = about 11.2 in.
- c. Pluto's diameter: = about 0.18 in.
- d. Mercury: = 3 ft
- e. Earth: = 7.75 ft
- f. Pluto: = 306 ft

PTS: 1 DIF: L2 REF: Comparing and Scaling | Question Bank
 OBJ: Investigation 2: Comparing Ratios Percents and Fractions
 NAT: NAEP N4b| NAEP N4c| NAEP N5f
 STA: 7PA M7.A.2.2.1| 7PA M7.A.2.2.2| 7PA M7.A.2.2.3
 TOP: Problem 2.3 Scaling Ratios KEY: scaling up | scaling down

83. ANS:

- a. If you add up the numbers of years for all the activities, you get a lifetime of approximately 73 years.
- b. More time is spent sleeping than watching TV. The ratio is approximately 2 to 1.
- c. 2 times
- d. sleeping: $24\frac{1}{2}$ hours out of 73 hours, or about 34%; work or school: $13\frac{1}{2}$ hours out of 73 hours, or about 18%
- e. 13 out of 73 is about 12 out of 72, or $\frac{1}{6}$; 9 !s out of 73 is about 9 out of 72, or $\frac{1}{8}$
- f. Answers will vary.

PTS: 1 DIF: L2

REF: Comparing and Scaling | Additional Practice Investigation 1

OBJ: Investigation 1: Making Comparisons

NAT: NAEP N1el NAEP N3al NAEP N4a

STA: 7PA M7.A.2.2.1

TOP: Problem 1.3 Writing Comparison Statements

84. ANS:

- a. The percent is found from the ratio of the weight of the body part to the total body weight of 152 pounds: head is 7%, neck and trunk are 46%, arms are 11%, hands are 2%, legs are 31%, and feet are 3%.
- b. To determine the size of the sections, students must determine percents of 360 degrees.
- c. The neck, trunk, and legs account for 77% of the total body weight.

PTS: 1 DIF: L2

REF: Comparing and Scaling | Additional Practice Investigation 1

OBJ: Investigation 1: Making Comparisons

NAT: NAEP N1el NAEP N3al NAEP N4a

STA: 7PA M7.A.2.2.1

TOP: Problem 1.3 Writing Comparison Statements

85. ANS:

- a. $756 \times 0.29 = 219$
- b. $756 \times 0.37 = 280$
- c. The percents don't add to 100% because the three groups are not necessarily exclusive. For example, a student might take the bus and play in the band. Because the percents add to more than 100%, there must be some overlap between the groups of students who participate in sports, play in the band, and take the bus.

PTS: 1 DIF: L2

REF: Comparing and Scaling | Additional Practice Investigation 1

OBJ: Investigation 1: Making Comparisons

NAT: NAEP N1el NAEP N3al NAEP N4a

STA: 7PA M7.A.2.2.1| 7PA M7.A.2.2.2| 7PA M7.A.2.2.3

TOP: Problem 1.1 Exploring Ratios and Rates

KEY: ratio

86. ANS:

- a. There are 30 students ($16 + 10 + 4$), and $\frac{10}{30} = 33\frac{1}{3}\%$ of the students are wearing boots.
- b. If we assume that the ratio of students in Ms. Yadav's class wearing boots is the same as the ratio of students in the entire school wearing boots, then an estimate would be $33\frac{1}{3}\%$ of 1006 or 335 students.

PTS: 1 DIF: L2
 REF: Comparing and Scaling | Additional Practice Investigation 1
 OBJ: Investigation 1: Making Comparisons
 NAT: NAEP N1e| NAEP N3a| NAEP N4a STA: 7PA M7.A.2.2.1
 TOP: Problem 1.3 Writing Comparison Statements

87. ANS:

- a. The total number of endangered species is $640 + 61 + 494 = 1195$. Of these, 494 are found only in foreign countries. This is $\frac{494}{1195}$, or about $\frac{5}{12}$.
- b. 35 times more; species in U.S.: $378 + 10 = 388$; species in foreign countries: $10 + 1 = 11$; 388 is about 35 times more than 11.
- c. About 32%. $262 \div 816 = 0.321784314$
- d. (Animals) 378:262 (378 to 262) and (Plants) 1:493 (1 to 493)
- e. 41

PTS: 1 DIF: L2
 REF: Comparing and Scaling | Additional Practice Investigation 1
 OBJ: Investigation 1: Making Comparisons
 NAT: NAEP N1e| NAEP N3a| NAEP N4a STA: 7PA M7.A.2.2.1
 TOP: Problem 1.3 Writing Comparison Statements

88. ANS:

- a. $100 \text{ cm} = 1 \text{ m} = 1,000,000 \text{ microns}$. So $1 \text{ cm} = 10,000 \text{ microns}$.
- b. 0.2911 cm
- c. 351 microns
- d. Centimeters would be best. Meters are too big, and microns are too small.

PTS: 1 DIF: L2
 REF: Comparing and Scaling | Additional Practice Investigation 2
 OBJ: Investigation 2: Comparing Ratios Percents and Fractions
 NAT: NAEP N4b| NAEP N4c| NAEP N5f
 STA: 7PA M7.A.2.2.1| 7PA M7.A.2.2.2| 7PA M7.A.2.2.3
 TOP: Problem 2.3 Scaling Ratios KEY: scaling up | scaling down

89. ANS:

- a. 18:12 or 3:2
- b. 12:18 or 2:3
- c. 18:30 or 3:5
- d. 30:18 or 5:3

PTS: 1

DIF: L2

REF: Comparing and Scaling | Additional Practice Investigation 2

OBJ: Investigation 2: Comparing Ratios Percents and Fractions

NAT: NAEP N4b| NAEP N4c| NAEP N5f

STA: 7PA M7.A.2.2.1| 7PA M7.A.2.2.2| 7PA M7.A.2.2.3

TOP: Problem 2.3 Scaling Ratios

KEY: scaling up | scaling down

90. ANS:

	<35	35-44	45-54	55-64
Male	85,000	150,000	140,000	90,000
Female	50,000	60,000	35,000	10,000

a. 85,000 to 50,000 = 17 to 10

b. 150,000 to 60,000 = 5 to 2

c. 140,000 to 35,000 = 4 to 1

d. 90,000 to 10,000 = 9 to 1

PTS: 1

DIF: L2

REF: Comparing and Scaling | Additional Practice Investigation 3

OBJ: Investigation 3: Comparing and Scaling Rates

NAT: NAEP N11| NAEP N1a| NAEP N2a

STA: 7PA M7.A.2.2.2| 7PA M7.A.2.2.3 TOP: Problem 3.1 Making and Using a Rate Table

KEY: rates | unit rate

91. ANS:

a. $\frac{10}{27}$ and 37%. $50,000 \div (50,000 + 85,000) = 50,000 \div 135,000 = \frac{10}{27} = 0.37$ b. $\frac{2}{7}$ and 29%. $60,000 \div (150,000 + 60,000) = 60,000 \div 210,000 = \frac{2}{7} = 0.286$ c. $\frac{1}{5}$ and 20%. $35,000 \div (140,000 + 35,000) = 35,000 \div 175,000 = \frac{1}{5} = 0.2$ d. $\frac{1}{10}$ and 10%. $10,000 \div (90,000 + 10,000) = 10,000 \div 100,000 = \frac{1}{10} = 0.1$

PTS: 1

DIF: L2

REF: Comparing and Scaling | Additional Practice Investigation 3

OBJ: Investigation 3: Comparing and Scaling Rates

NAT: NAEP N11| NAEP N1a| NAEP N2a

STA: 7PA M7.A.2.2.2| 7PA M7.A.2.2.3 TOP: Problem 3.1 Making and Using a Rate Table

KEY: rates | unit rate

92. ANS:

- a. $8 \times 3 = 24$, so we can write a proportion to solve. $\frac{24}{3} = \frac{x}{52}$ $x = 416$ miles
- b. For Josh to have a four-week average of 10 miles per week, he will need to jog a total of 40 miles. Since he has jogged $3 \times 8 = 24$ miles for the first three weeks, Josh will need to jog $40 - 24 = 16$ miles during the fourth week.

PTS: 1 DIF: L2
 REF: Comparing and Scaling | Additional Practice Investigation 3
 OBJ: Investigation 3: Comparing and Scaling Rates
 NAT: NAEP N1| NAEP N1a| NAEP N2a
 STA: 7PA M7.A.2.2.2| 7PA M7.A.2.2.3 TOP: Problem 3.2 Finding Rates

93. ANS:

- a. $W = 55 \times T$
- b. $55 \times 20 = 1100$ words
- c. Yes, he will be able to finish the essay; Tony can type 1650 words in 30 minutes.

PTS: 1 DIF: L2
 REF: Comparing and Scaling | Additional Practice Investigation 3
 OBJ: Investigation 3: Comparing and Scaling Rates
 NAT: NAEP N1| NAEP N1a| NAEP N2a
 STA: 7PA M7.A.2.2.2| 7PA M7.A.2.2.3 TOP: Problem 3.2 Finding Rates

94. ANS:

a.

	12 Ounce Can	20 Ounce Bottle
Diet Sun Drop	69	115
Mountain Dew	55	91.6 (~ 92)
Dr. Pepper	41	68.4 (~ 68)
Pepsi Cola	38	63.4 (~ 63)
Coca-Cola	34	56.6 (~ 57)
Barq's Root Beer	22	36.6 (~ 37)

- b. i. 115 to 37 (or 69 to 22), or about 3 to 1
 ii. 92 to 68 (or 55 to 41), or about 9 to 7
 iii. 92 to 57 (55 to 34), 8 to 5

PTS: 1 DIF: L2
 REF: Comparing and Scaling | Additional Practice Investigation 3
 OBJ: Investigation 3: Comparing and Scaling Rates
 NAT: NAEP N1| NAEP N1a| NAEP N2a
 STA: 7PA M7.A.2.2.2| 7PA M7.A.2.2.3 TOP: Problem 3.3 Unit Rates and Equations
 KEY: rates | unit rate | variables | independent variable | dependent variable | equation

95. ANS:

- a. Because a person can participate in more than one sport and therefore someone may have partaken in multiple activities during the course of a year.
- b. Yes, the ratio of female walkers to male walkers is 2 to 1 (43,373,000 to 21,054,000 \approx 2 to 1)
- c. Yes, the ratio of young swimmers to old swimmers is about 4 to 1 (10,874,000 to 2,756,000 \approx 4 to 1).
- d. No, because the data is not broken down into those categories. It gives numbers for males, in all age ranges, and females in all age ranges, as well as the both ages ranges but not broken down into gender. There is not a way to conclude the participation of teenage boys and older adult women.

e.

	Males	Females
Bicycle riding	26,751,635 (\approx 26,752,000)	25,439, 213 (\approx 25,439,000)
Camping	25,230,097 (\approx 25,230,000)	21,274,314 (\approx 21,274,000)
Exercise walking	22,930,907 (\approx 22,931,000)	47,239,585 (\approx 47,240, 000)
Fishing	33,163,446 (\approx 33,164,000)	16,211,957 (\approx 16,212,000)
Swimming	30,183, 539 (\approx 30,183,539)	36,638,915 (\approx 36,639,000)

Solve using equivalent fractions. The number of current participants in 1993 over the total population is equal to the number of projected participants in 2000 (???) over the total population. For example,

$\frac{23,165,000}{258,000,000} = \frac{?}{281,000,000}$. Find the scale factor from 258 million to 281 million and then multiply each participation number by the scale factor.

PTS: 1 DIF: L2

REF: Comparing and Scaling | Additional Practice Investigation 3

OBJ: Investigation 3: Comparing and Scaling Rates

NAT: NAEP N1| NAEP N1a| NAEP N2a

STA: 7PA M7.A.2.2.2| 7PA M7.A.2.2.3 TOP: Problem 3.1 Making and Using a Rate Table

KEY: rates | unit rate

96. ANS:

$3.5 \times 50 = 175$ km. This can be set up as a proportion. X stands for the actual distance between the

two towns. $\frac{X}{3.5 \text{ cm}} = \frac{50 \text{ km}}{1 \text{ cm}}$, $X = 3.5 \times 50 = 175$ km.

PTS: 1 DIF: L2

REF: Comparing and Scaling | Additional Practice Investigation 3

OBJ: Investigation 3: Comparing and Scaling Rates

NAT: NAEP N1| NAEP N1a| NAEP N2a

STA: 7PA M7.A.2.2.2| 7PA M7.A.2.2.3 TOP: Problem 3.2 Finding Rates

97. ANS:

- a. Kyle will make 7 hits.
- b. Kyle will make 12 hits.
- c. Kyle would need 29 at bats.
- d. Kyle would need 52 at bats.

PTS: 1 DIF: L2

REF: Comparing and Scaling | Additional Practice Investigation 4

OBJ: Investigation 4: Making Sense of Proportions

NAT: NAEP N1d| NAEP M1k| NAEP A4b

STA: 7PA M7.A.2.2.2| 7PA M7.A.2.2.3 TOP: Problem 4.2 Applications of Proportions

98. ANS:

a. 16. Using equivalent fractions, $\frac{4}{12} = \frac{?}{48}$. The scale factor is 4.

b. 28. The scale factor is about 7.

c. 36 hits. To make 8 more homeruns from the original 4, Calvin would be hitting 12 total. Using equivalent fractions $\frac{4}{12} = \frac{12}{?}$. The scale factor is 3.

d. 120 hits. To hit 36 more homeruns from the original 4, Calvin would be making 40 total. Using equivalent fractions $\frac{4}{12} = \frac{40}{?}$. The scale factor is 10.

PTS: 1 DIF: L2

REF: Comparing and Scaling | Additional Practice Investigation 4

OBJ: Investigation 4: Making Sense of Proportions

NAT: NAEP N1d| NAEP M1k| NAEP A4b

STA: 7PA M7.A.2.2.2| 7PA M7.A.2.2.3 TOP: Problem 4.2 Applications of Proportions

99. ANS:

- | | | | | | |
|----|----------|----|------------|----|-----------|
| a. | $x = 36$ | b. | $x = 49.8$ | c. | $x = 351$ |
| d. | $x = 36$ | e. | $x = 10.5$ | f. | $x = 3$ |

PTS: 1 DIF: L2

REF: Comparing and Scaling | Additional Practice Investigation 4

OBJ: Investigation 4: Making Sense of Proportions

NAT: NAEP N1d| NAEP M1k| NAEP A4b

STA: 7PA M7.A.2.2.2| 7PA M7.A.2.2.3

TOP: Problem 4.3 Developing Strategies for Solving Proportions

100. ANS:

It would seem that the data are from all the middle school students in a school since there are 330 students' data reported. The students probably kept track of how much sleep they had for 1 week and then reported an average number of hours. For the number of movies and videos watched, they probably kept track of the number watched for a week and then reported the sum.

PTS: 1 DIF: L2 REF: Data Distributions | Check-Up

OBJ: Investigation 1: Making Sense of Variability NAT: NAEP D1a| NAEP D1b

STA: 7PA M7.D.2.2.1| 7PA M7.D.2.1.1 TOP: Problem 1.1 Variability in Categorical Data

KEY: Distribution | median | data collection | mean

101. ANS:

- a. This distribution is skewed.
- b. Answers will vary. The range of the data is 0 to 50 movies and/or videos. It looks like there are some outliers (data values that are greater than 20 movies and/or videos). There are several repeated data values, particularly the data values for 0 to 5 movies and/or videos. The data cluster at the smaller numbers, with the greatest number of students watching 0 to about 5 movies and/or videos. There probably is a second, much smaller cluster at 5 to 10 movies and/or videos.
- c. Answers will vary. The actual median is 2 movies and/or videos. Students would need to realize that the median marks the location where the data will split evenly so there are the same numbers below and above the median. In this case, that data value is 2.
- d. Answers will vary. Because the distribution is skewed, we can anticipate that the mean will be larger than the median. The mean is a kind of fulcrum in a distribution so students may think about where the distribution would “balance” which is around 4 movies and/or videos (actual mean is 4.111212).

PTS: 1 DIF: L2 REF: Data Distributions | Check-Up
 OBJ: Investigation 2: Making Sense of Measures of Center
 NAT: NAEP D2a| NAEP D2b| NAEP D2c STA: 7PA M7.E.2.1.2
 TOP: Problem 2.4 Measures of Center and Shapes of Distributions
 KEY: data collection | Distribution

102. ANS:

- a. The distribution is bell-shaped.
- b. Answers will vary. The range is from 5 hours to about 12 hours. There does not appear to be any outliers. The data seem to “grow” from 5 hours to almost 8 hours. Then there are a lot of data in the interval of 8 to 9 hours sleep. It looks like there are three heavily repeated data values: 8 hours, 8.5 hours, and 9 hours. Then the data more quickly taper off to about 12 hours.
- c. Answers will vary. Since the distribution is bell-shaped, the median will be near the center. Given the data that come before 8 hours, it appears the median might be around 8 hours. The actual median is 8.42 hours.
- d. Answers will vary. Since the distribution is bell-shaped, the mean will be near the center and similar to the median. Given the shape of the distribution, it appears the mean might be around 8 hours. The actual mean is 8.26491 hours.

PTS: 1 DIF: L2 REF: Data Distributions | Check-Up
 OBJ: Investigation 2: Making Sense of Measures of Center
 NAT: NAEP D2a| NAEP D2b| NAEP D2c STA: 7PA M7.E.2.1.2
 TOP: Problem 2.4 Measures of Center and Shapes of Distributions
 KEY: Distribution | mean | median

103. ANS:

a. Answers will vary; the intent is for students to demonstrate that they can read the scale.

Mean reaction time with DH: 0.8+

Mean reaction time with NDH: 1.69+

Median reaction time with DH: 0.79+

Median reaction time with NDH: 1.58+

Range of reaction times for DH: 0.62, from 0.58 – 1.2

Range of reaction times for NDH: 0.92, from 0.68 – 1.6

b. Answers will vary. The ranges for the two distributions are different. For the DH, the range is about 0.6 seconds and for the NDH the range is about 1 second so there is a greater spread in NDH times. Also, the endpoints (range) are shifted higher (to the right) for NDH. The median reaction time for NDH is about two times greater than that for DH; the same appears to be true for the mean. Students seem to be twice as fast when they use their DH when compared to their NDH.

PTS: 1 DIF: L2 REF: Data Distributions | Partner Quiz

OBJ: Investigation 3: Comparing Distributions: Equal Numbers of Data Values

NAT: NAEP D2a| NAEP D2b| NAEP D2c

STA: 7PA M7.E.1.1.1| 7PA M7.E.2.1.2

TOP: Problem 3.3 Comparing More than a Few Students

KEY: data collection | mean | median | range | outliers

104. ANS:

The data collected in all three parts are numerical.

PTS: 1 DIF: L2 REF: Data Distributions | Question Bank

OBJ: Investigation 1: Making Sense of Variability

NAT: NAEP D1a| NAEP D1b

STA: 7PA M7.D.2.2.1| 7PA M7.D.2.1.1 TOP: Problem 1.2 Variability in Numerical Counts

KEY: Classify Data

105. ANS:

The answers to data gathered in situation (a) should be similar, while the data gathered in situations (b) and (c) should be quite varied. Student responses may vary slightly, however they should be well reasoned and consider the real life variation that may be found in each situation.

PTS: 1 DIF: L2 REF: Data Distributions | Question Bank

OBJ: Investigation 1: Making Sense of Variability

NAT: NAEP D1a| NAEP D1b

STA: 7PA M7.D.2.2.1| 7PA M7.D.2.1.1 TOP: Problem 1.2 Variability in Numerical Counts

KEY: Classify Data

106. ANS:

72 degrees

PTS: 1 DIF: L2 REF: Data Distributions | Question Bank

OBJ: Investigation 1: Making Sense of Variability

NAT: NAEP D1a| NAEP D1b

STA: 7PA M7.D.2.2.1| 7PA M7.D.2.1.1

TOP: Problem 1.3 Variability in Numerical Measurements

KEY: average | mean

107. ANS:

The boys watched slightly more movies than the girls did in general as their mean is slightly higher than the girls. However, the difference is less than a whole movie, which is not significant. The boys also had a slightly greater range of movies watched. Most people, boys and girls, watched 3–5 movies. A few must have watched a large number of movies.

PTS: 1 DIF: L2 REF: Data Distributions | Question Bank
 OBJ: Investigation 2: Making Sense of Measures of Center
 NAT: NAEP D2a| NAEP D2b| NAEP D2c STA: 7PA M7.E.2.1.2
 TOP: Problem 2.1 The Mean as Fair Share
 KEY: mean | median | mode | range

108. ANS:

- a. Possible answers: The difference in means for the boys and girls is very small. The difference between the mean number of hours a boy slept and the mean number of hours a girl slept is 0.1 hour. 8% of the boys surveyed slept more than 10 hours, while only 2% of the girls surveyed slept more than 10 hours. The boys' data shows a greater range and more gaps which indicates greater variability in the data.
- b. $\frac{14}{25}$ of the boys slept more than the mean number of hours per night. 56% of the boys slept more than the mean number of hours per night.
- c. $\frac{24}{50}$ or $\frac{12}{25}$ of the girls slept more than the mean number of hours per night. 48% of the girls slept more than the mean number of hours per night.
- d. Percent would allow you to compare out of 100. Using counts would make the comparison harder.
- e. Statements ii. or iii. The median is located where the data cluster. If students choose option iii., then they must have sufficient reasoning to defend their decision, such as the mean takes into account the high and the low values of the data. (Mean=7.7 hours).
- f. There is not enough information given to predict with certainty any change in the median, mean, or range. However, if the sample was drawn randomly, you would not expect a significant change in the mean or the median.

PTS: 1 DIF: L2 REF: Data Distributions | Question Bank
 OBJ: Investigation 3: Comparing Distributions: Equal Numbers of Data Values
 NAT: NAEP D2a| NAEP D2b| NAEP D2c
 STA: 7PA M7.E.1.1.1| 7PA M7.E.2.1.1| 7PA M7.E.2.1.2
 TOP: Problem 3.1 Measuring and Describing Reaction Times
 KEY: dot plots | frequency charts | median | mean | percent

109. ANS:

- a. His mean score would be 93 points.
- b. Possible answer: 90 points, 95 points, 98 points and 89 points.
- c. Answers will vary, for the given example in part b, the range is 9 points which tells us that his scores did not vary a great deal.

PTS: 1 DIF: L2 REF: Data Distributions | Question Bank
 OBJ: Investigation 2: Making Sense of Measures of Center
 NAT: NAEP D2a| NAEP D2b| NAEP D2c STA: 7PA M7.E.2.1.2
 TOP: Problem 2.1 The Mean as Fair Share KEY: mean | range

110. ANS:

- a. The range is 91 basketball cards, which implies that the data is fairly spread out.
- b. Each person would receive 310 cards. To find this total the individual amounts are combined and then shared equally among the five friends.
- c. The first five friends would receive less cards (about 302 cards per person), because Susanna's amount of cards is less than the original average (310 cards).

PTS: 1 DIF: L2 REF: Data Distributions | Question Bank
 OBJ: Investigation 2: Making Sense of Measures of Center
 NAT: NAEP D2a| NAEP D2b| NAEP D2c STA: 7PA M7.E.2.1.2
 TOP: Problem 2.2 The Mean as a Balance Point in a Distribution
 KEY: range | mean

111. ANS:

None of the friends necessarily started with 364 cards. Since they divided them equally, some of them may have had more than 364 and others may have had less. However there is not enough information to determine whether or not any one individual had exactly 364 cards to begin with.

PTS: 1 DIF: L2 REF: Data Distributions | Question Bank
 OBJ: Investigation 2: Making Sense of Measures of Center
 NAT: NAEP D2a| NAEP D2b| NAEP D2c STA: 7PA M7.E.2.1.2
 TOP: Problem 2.2 The Mean as a Balance Point in a Distribution
 KEY: mean

112. ANS:

Enrico is correct because you need to include all the data when determining the mean, even the repeated values. If you divide the total meal costs by 3 you get \$5.23 per person, which is greater than any one cost of a meal and, therefore, does not make sense.

PTS: 1 DIF: L2 REF: Data Distributions | Question Bank
 OBJ: Investigation 2: Making Sense of Measures of Center
 NAT: NAEP D2a| NAEP D2b| NAEP D2c STA: 7PA M7.E.2.1.2
 TOP: Problem 2.1 The Mean as Fair Share KEY: mean

113. ANS:

The students should disagree with John's reasoning because the total runs of all the games is considered when determining the mean number of runs per game. If you do not count the 0 runs, you divide the 33 runs by 12 games and get 2.75 runs per game. This is incorrect because $2.75 \text{ runs per game} \times 15 \text{ games} = 41$, which is greater than the total runs of John's team, 33.

PTS: 1 DIF: L2 REF: Data Distributions | Question Bank
 OBJ: Investigation 1: Making Sense of Variability NAT: NAEP D1a| NAEP D1b
 STA: 7PA M7.D.2.2.1| 7PA M7.D.2.1.1
 TOP: Problem 1.3 Variability in Numerical Measurements KEY: average | mean

114. ANS:

- a. The mean would increase because you are replacing a lower data value with a higher data value.
The mean would increase by $\frac{3}{16}$ of an hour since the total hours would increase by 1.5 hours.
- b. The median would not change since the 4th and 5th values in the ordered data set of eight values remain at 1 hour.
- c. The range would not change since the smallest value would still be 0.5 and the largest value would still be 3.0.

PTS: 1 DIF: L2 REF: Data Distributions | Question Bank

OBJ: Investigation 2: Making Sense of Measures of Center

NAT: NAEP D2a| NAEP D2b| NAEP D2c STA: 7PA M7.E.2.1.2

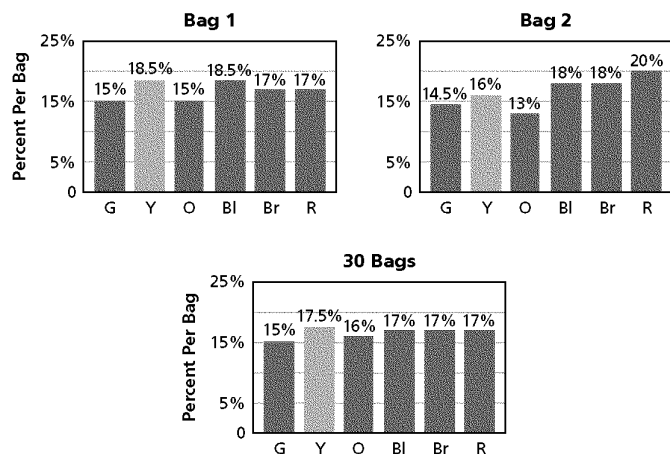
TOP: Problem 2.4 Measures of Center and Shapes of Distributions

KEY: mean | median | range

115. ANS:

- a. Bag 1: 15% green, 18.5% yellow, 15% orange, 18.5% blue, 17% brown, and 17% red. Bag 2: 14.5% green, 16% yellow, 13% orange, 18% blue, 18% brown, and 20% red.

b. e.



- c. Possible answers: The bar graph for Bag 1 is fairly flat or uniform, so the data does not vary much. The Green and Orange candies show the lowest percent in each bag. Blue, Brown and Red candies together are more than $\frac{1}{2}$ of the candies in each bag. There is less variation in percent of colors of candies in Bag 1 than in Bag 2. The range of values in Bag 1 is 3.5%.
- d. The plan appears to be for the least percent of Green and Orange candies – around 14 to 15%. The remaining colors: Yellow, Blue, Brown, and Red would be a slightly larger percent – around 18%.
- f. Possible Answer: There is the same percent of blue, brown and red candies in the 30 bags. The percent of green and orange candies is slightly less in the bags. It is a pretty uniform or flat distribution.
- g. There seems to be a general plan that the percent of colors in each bag of Crispy M&M™ candies will be between 15% and 17%. It looks like the plan might be for Green and Orange candies to be slightly less than the other four colors.

PTS: 1 DIF: L2 REF: Data Distributions | Question Bank
 OBJ: Investigation 2: Making Sense of Measures of Center
 NAT: NAEP D2a| NAEP D2b| NAEP D2c STA: 7PA M7.E.2.1.2
 TOP: Problem 2.4 Measures of Center and Shapes of Distributions
 KEY: percent | bar graph | finding patterns

116. ANS:

- a. The mean drops to 2.375. This happens because the sum does not change, but the number of friends increases. The median becomes 1.5 because all of the new data values are added to the left of the old median and, therefore, the new median is shifted to the left.
- b. The mean becomes 2.93 because the total increases and the number of people stays the same. The location of the median does not change because the stack of threes has six values to the left of it and five to the right of it. When you move one value from the left to the right of the median, it does not change because of the number of entries on 3. Notice that moving one data value to the right of the median, you now have six values to the right and five values to the left of the three on the stack of 3's, so the median is still 3.

PTS: 1 DIF: L2 REF: Data Distributions | Question Bank
 OBJ: Investigation 2: Making Sense of Measures of Center
 NAT: NAEP D2a| NAEP D2b| NAEP D2c STA: 7PA M7.E.2.1.2
 TOP: Problem 2.4 Measures of Center and Shapes of Distributions
 KEY: mean | median

117. ANS:

Possible answers: The gymnasts' heights are clustered between 4 feet and 5 feet, while the basketball players are clustered between 5.5 feet and 6.25 feet. The dance attendee's heights has a cluster at the low end, which probably represents most of the children, and another cluster at the high end, which probably represents most of the adults. The range of the dance attendees is 2.5 feet, while the range of heights for the girl gymnasts is 1.75 feet and the range of heights for the boy basketball players is 1.5 feet. The distribution of dance attendees shows most variability.

PTS: 1 DIF: L2 REF: Data Distributions | Question Bank
 OBJ: Investigation 3: Comparing Distributions: Equal Numbers of Data Values
 NAT: NAEP D2a| NAEP D2b| NAEP D2c
 STA: 7PA M7.E.1.1.1| 7PA M7.E.2.1.2
 TOP: Problem 3.4 Comparing Fastest and Slowest Trials
 KEY: range | compare data | bar graph

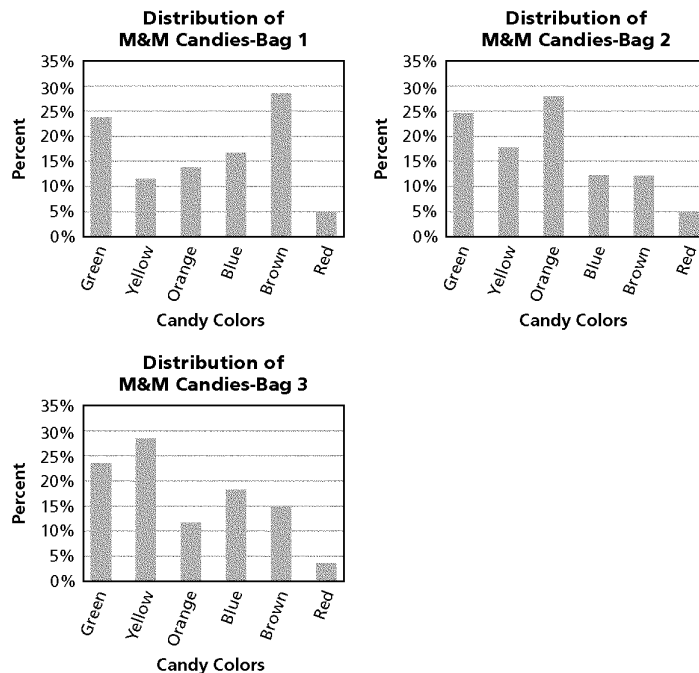
118. ANS:

The gymnasts should have a median close to 4.5 since that is about the middle of the data, and a mean at about the same location. The basketball players have a median of about 5.75 feet because that is about the middle of the data, and a mean at about the same location. The mean of the dance attendee's will be between 5 and 5.5 feet because this appears to be where the balance point for the data is located. The median is at about the same place. The distribution is quite symmetric and both mean and median will be in the middle. Notice very few people have the mean or median height.

PTS: 1 DIF: L2 REF: Data Distributions | Question Bank
 OBJ: Investigation 3: Comparing Distributions: Equal Numbers of Data Values
 NAT: NAEP D2a| NAEP D2b| NAEP D2c
 STA: 7PA M7.E.1.1.1| 7PA M7.E.2.1.2
 TOP: Problem 3.4 Comparing Fastest and Slowest Trials KEY: mean | median

119. ANS:

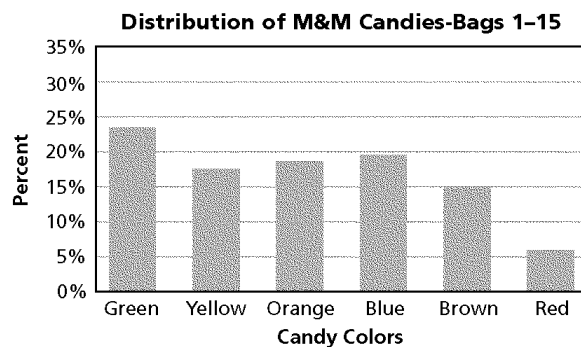
A. 1.



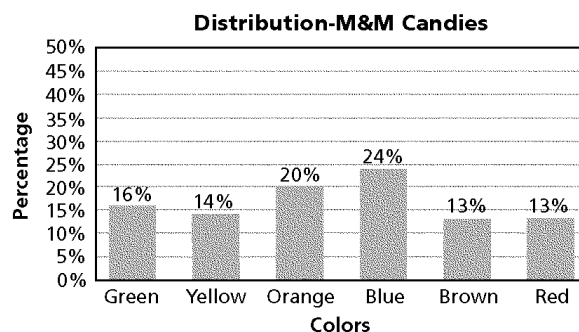
2. Answers will vary. Some possible statements are: In each of the three bags red M&M's seemed less frequent. Bags 1, 2, and 3 each had a different most popular color.

B. 1.

Bag #	Green	Yellow	Orange	Blue	Brown	Red	Total
1-15	206	155	165	173	133	53	885



2. Answers will vary. Some possible statements are: Red candies seem to occur less frequently than any of the other colors. Green candies seem to be significantly more common than any of the other candies.
3. The new distribution of colors in M&Ms does have a plan; however, it is less easy to observe when looking at individual or even sets of data from bags of M&M candies. The plan is:



From the previous distributions, we might observe that red seems to be less than the other colors. The other colors seem to vary in terms of being less and being more which is reflective of less variation within the actual planned distributions.

PTS: 1 DIF: L2

REF: Data Distributions | Additional Practice Investigation 1

OBJ: Investigation 1: Making Sense of Variability

NAT: NAEP D1a| NAEP D1b

STA: 7PA M7.D.2.2.1| 7PA M7.D.2.1.1 TOP: Problem 1.1 Variability in Categorical Data

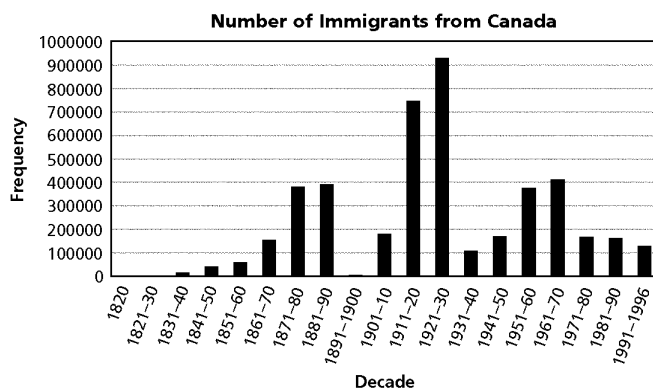
KEY: bar graph | percent | Distribution

120. ANS:

a. 1911-1920 is 742,185 immigrants; 1941-1950 is 171,718 immigrants.

b. (Figure 1)

c. (i.) is true.



PTS: 1 DIF: L2

REF: Data Distributions | Additional Practice Investigation 1

OBJ: Investigation 1: Making Sense of Variability

NAT: NAEP D1a| NAEP D1b

STA: 7PA M7.D.2.2.1| 7PA M7.D.2.1.1 TOP: Problem 1.2 Variability in Numerical Counts

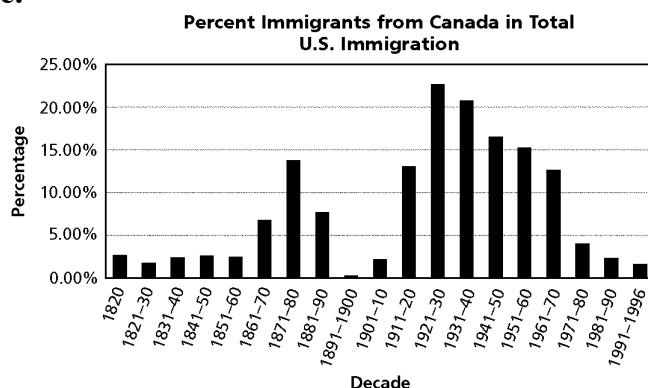
KEY: reading charts | bar graph

121. ANS:

a. 1911-1920 is 5,735,811 immigrants; 1941-1950 is 1,035,039 immigrants.

b. 1911-1920 is 13%; 1941-1950 is 17%.

c.



d. Answers will vary. Some possible statements are: Immigrants from Canada were higher in the decade between 1911-1920 than in any other decade, except 1921-1930. The percentage of immigrants from Canada has been decreasing every decade since its peak in the decade 1921-1930.

PTS: 1

DIF: L2

REF: Data Distributions | Additional Practice Investigation 1

OBJ: Investigation 1: Making Sense of Variability

NAT: NAEP D1a| NAEP D1b

STA: 7PA M7.D.2.2.1| 7PA M7.D.2.1.1 TOP: Problem 1.2 Variability in Numerical Counts

KEY: reading charts | percent | bar graph | compare data

122. ANS:

Immigration from Canada began slowly and increased over the years until about 1920-1930, at which point it had reached its highest rate. During the years after, immigration tapered off, however it never declined to the values seen in the earlier years.

PTS: 1

DIF: L2

REF: Data Distributions | Additional Practice Investigation 1

OBJ: Investigation 1: Making Sense of Variability

NAT: NAEP D1a| NAEP D1b

STA: 7PA M7.D.2.2.1| 7PA M7.D.2.1.1 TOP: Problem 1.2 Variability in Numerical Counts

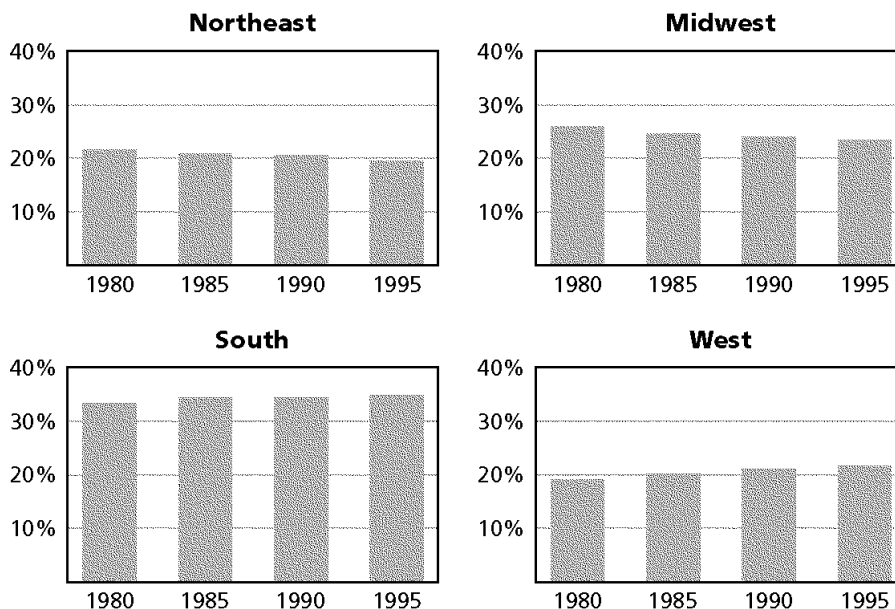
KEY: compare data | bar graph

123. ANS:

a. See table below

	Northeast	Midwest	South	West
1980	21.67%	25.99%	33.27%	19.06%
1985	20.98%	24.72%	34.22%	20.09%
1990	20.42%	24.00%	34.36%	21.22%
1995	19.59%	23.47%	34.99%	21.95%

b.



c. West: Greatest increase 14.5 million increase
 Northeast: Smallest increase 2.4 million increase

d. West: Greatest increase of 2.89%
 Midwest: Greatest decrease of 2.53%

e. Answers will vary. Some possible statements are: In 1995 the percentage of the United States population whom were living in the South was about 13 percent greater than the percent of the population living in the West. The percent of the population living in the Northeast decreased 2 percent between the years 1980 and 1995.

f. i. TRUE
 ii. TRUE
 iii. FALSE
 iv. TRUE, by most ways of looking at the data

PTS: 1 DIF: L2
 REF: Data Distributions | Additional Practice Investigation 1
 OBJ: Investigation 1: Making Sense of Variability
 STA: 7PA M7.D.2.2.1| 7PA M7.D.2.1.1
 TOP: Problem 1.3 Variability in Numerical Measurements
 KEY: percent | reading charts | bar graph

NAT: NAEP D1a| NAEP D1b

124. ANS:

Line plots will vary.

There must be 2 values at 9, since the median is “between” the 10th and 11th values.

There must be at least one value at 8 and one value at 12.5

So there must be one value at 8, 8.5, or 9, and the rest above 9.5.

PTS: 1

DIF: L2

REF: Data Distributions | Additional Practice Investigation 1

OBJ: Investigation 1: Making Sense of Variability

NAT: NAEP D1a| NAEP D1b

STA: 7PA M7.D.2.2.1| 7PA M7.D.2.1.1

TOP: Problem 1.3 Variability in Numerical Measurements

KEY: Line Plot | mean | median | mode | range

125. ANS:

Line plots will vary.

There must be 2 values at 10, since the median is “between” the 10th and 11th values.

There must be at least one value at 8 and one value at 12.5

So there could be two values below 9.5, and the rest above 10.

PTS: 1

DIF: L2

REF: Data Distributions | Additional Practice Investigation 1

OBJ: Investigation 1: Making Sense of Variability

NAT: NAEP D1a| NAEP D1b

STA: 7PA M7.D.2.2.1| 7PA M7.D.2.1.1

TOP: Problem 1.3 Variability in Numerical Measurements

KEY: Line Plot | mean | median | mode | range

126. ANS:

Answers will vary. Some possible statements are: Leah’s time trials had a range of 0.44 seconds, which given her small trial size displays a possible inconsistency in trial results. However Leah also had 4 results all within 0.15 seconds, so her large range does not necessary imply great variation in reaction times.

PTS: 1

DIF: L2

REF: Data Distributions | Additional Practice Investigation 3

OBJ: Investigation 3: Comparing Distributions: Equal Numbers of Data Values

NAT: NAEP D2a| NAEP D2b| NAEP D2c

STA: 7PA M7.E.1.1.1| 7PA M7.E.2.1.1| 7PA M7.E.2.1.2

TOP: Problem 3.1 Measuring and Describing Reaction Times KEY: bar graph

127. ANS:

- a. The students are quicker with their right hands since the mean and median are both less than 4 for their right hands while the mean and median are both greater than 4 for their left hands.
- b. Answers will vary. Either choice is plausible as long as their justification is valid.
- c. It is possible that some students' right hands were their non-dominant hands. It would seem that the unusual values, particularly above 0.75 seconds, could be the result of someone using their non-dominant hand.

PTS: 1

DIF: L2

REF: Data Distributions | Additional Practice Investigation 3

OBJ: Investigation 3: Comparing Distributions: Equal Numbers of Data Values

NAT: NAEP D2a| NAEP D2b| NAEP D2c

STA: 7PA M7.E.1.1.1| 7PA M7.E.2.1.2

TOP: Problem 3.3 Comparing More than a Few Students

KEY: dot plots | frequency charts | mean | median